

COMPUTERWORLD

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And Does It Economically!

Model 67 Breaks the Core Barrier

By a CW Staff Writer

STAMFORD, Conn. — A new time sharing service, opened here Dec. 2, is using a Type 3 IBM software package on a single processor 360/67 — and is able to give its users more memory space for programs than the internal capacity of the system.

The service, operated by Computer Software Services, can run programs requiring up to 16 million bytes even though it currently has only a quarter of a million bytes of core storage physically available. Richard Orenstein, a CSS vice president, said that the programs do not

have to be written especially for the system, which can run any of the various System 360 operating systems and application packages, nor do they have to be modified for time sharing use (provided that the necessary peripherals are available).

Users access the system through Teletype, IBM 1050, and 2741 terminals. Robert Bernard said that CSS was preparing hardware/software interfaces to allow IBM 1130 systems to be used as terminals in the future. He said CSS also intended to provide facilities for nontime sharing models of the 360 system to be connected to the system.

The key to the ability to run programs which are written for machines larger

than the machines on which they are running lies in the Model 67 hardware. The addressing system differentiates between the addresses used by the program, and the physical address which the hardware is to use. The program addresses — called virtual addresses because there is no need for them to exist physically — are interpreted into physical addresses with the use of a small "associative" memory before being passed on to the execution unit. The associative memory simply takes the program's "virtual" address and replaces it wherever possible with the physical address where the program data is currently stored.

As there is insufficient core to store the (Continued on Page 32)



Hal Fienleib, a programmer at Computer Software Systems, uses a remote terminal to control a "virtual system" put at his disposal by the 360/67. The console terminal for the Model 67 is in the foreground.

Election Errors Are Laid to People

By a CW Staff Writer

SAN FRANCISCO — Election Day errors in computerized vote tabulating here have been traced to human errors, according to Thomas J. Mellon, the city's chief administrative officer.

"Maybe data processing is too sophisticated for our election workers," he said.

Whether the city will continue to use computers or will return to the former hand counting method has not yet been decided. With almost a year before the next election, the city has plenty of time to make the decision, Mellon said.

Unofficial Totals Far Off

While none of the results were reversed by the official count, in two instances the final totals were more than 13,000 votes higher than the earlier, unofficial results.

Considering that the city turned to computerized vote tabulating for the sake of accuracy following the November, 1967, election when a candidate was incorrectly declared a winner, city officials were shaken by this year's disparities.

"We kicked it around for a while," Mellon reported after a meeting with Registrar of Voters Basil Healey and EDP Director William Millard. "Everyone seemed to agree that the breakdown came in the process of converting the results from our voting machines to the scanner

sheets read by the computers."

Numbers Entered Inaccurately

Mellon said that most errors resulted from election workers transposing, changing, or dropping digits when transferring numbers to the scanner sheets.

"Many of our trained workers pulled out at the last minute, so we had many persons working on election day who didn't have time for much training."

The final, official results were compiled by adding machine.

On the Inside

Don't Just Accept Advice,
Find the Answers Yourself

— Page 5

Landmark Software Patent
Court Case, Part 2

— Page 27

Applications	8-9
Calendar	22
Contracts	29
Editorials	4
EDPeople	6
Education	18
Financial	20-21
New Products	6
Orders and Installations	28
Services	10
Software	24
Viewpoint	5

Fall Joint Computer Conference Expected to Draw Record Crowd

Special to Computerworld

SAN FRANCISCO — This year's Fall Joint Computer Conference, which opens here Dec. 9, is expected to be the biggest one yet, but conference officials declined to estimate attendance.

Of the more than 15,000 persons who attended last year's FJCC in Anaheim, 27% were in business data processing and 34% were in scientific programming and technical areas.

The conference, sponsored by the American Federation of Information Processing Societies (Afiips), represents the cumulative work in the field during the past six months. Afiips is a member of the International Federation of Information Processing Societies (Ifips), and many people from the international body attend.

Sightseeing Planned

The wives and children of attendees will have an opportunity to see some of the sights in and around San Francisco, with several special programs provided for their interest.

The Ladies Program Committee has arranged for sightseeing tours, educa-

Related stories appear on pages
12 and 13.

tional and cultural activities, and several get-togethers for relaxation. Registration for the tours will be from 2-9 p.m. Sunday, Dec. 8, and from 9-11 a.m. Monday, Dec. 9.

A hospitality suite will be available at the San Francisco Hilton throughout the conference, with hostesses and tour guides to give out information.

Registration Information

Regular conference registration will take place Sunday, Dec. 8, in the San Francisco Hilton from 2-9 p.m.; Monday, Dec. 9, and Tuesday, Dec. 10, in the Brooks Hall at the San Francisco Civic Center from 8 a.m.-5 p.m.; and Wednesday, Dec. 11, in the Brooks Hall at the San Francisco Civic Center from 8 a.m.-noon.

It is not necessary to register before

attending the keynote address by MIT President Howard Johnson Monday morning, Dec. 9.

The registration fee for society members is \$20, for nonmembers, \$30, and for full time students, \$3.

Program Information

The proceedings will be available at a distribution counter near the registration area.

The conference reception will take place Monday, Dec. 9, from 6-8 p.m. in the Continental Ballroom at the Hilton.

The conference luncheon, including an address by Dr. G. Hardin, will be at noon Wednesday, Dec. 11, also in the Continental Ballroom.



New Listing

Fletcher Jones, right, president of Computer Sciences Corp., Los Angeles, buys 100 shares of CSC stock after the company became the first software firm listed on the New York Stock Exchange. With Jones is NYSE President Robert W. Haack. Formerly the first software stock listed on the American Stock Exchange, CSC opened on the Big Board Nov. 26 at 59-7/8, rose to 60, and closed at 58-1/4. But it closed for the week at 60-1/2.

ACM Disavows Jurisdiction In Breach of Ethics Cases

Special to Computerworld
ANN ARBOR, Mich. — The ACM, generally regarded as the senior professional body in the computer field, has decided that it will not involve itself in ethical disputes between members. It points out, however, that the society's guidelines were adopted only two years ago for the purpose of providing a nucleus for evolution.

The guidelines state that ACM members who have proof of unethical or unfair behavior by other information processing professionals should report this to "the proper authority." It also urges members to refer ethical problems to "the proper ACM authorities." Previously it had been thought that these were one and the same. It now appears that this is not so.

President Galler Comments

ACM President Bernard Galler said that the requirement to

report any known unethical or unfair practices must be read as a suggestion "that [the member] may pursue the matter with the proper authority [outside the ACM]. What the proper authority may be will depend on the circumstances of the particular case and the jurisdiction of the various agencies or organizations charged with regulation and enforcement."

No Definition Available

No information was available at press time as to what other organization is considered by ACM to have ethical jurisdiction over its members' professional conduct.

Corporate Problems?

Industry sources suggested that the legal complications caused by the society's status as a tax-free corporation may be one of the determining factors behind the ACM decision. However, the decision does seem to weaken the society's role in other matters, such as the current pressure for stronger privacy protection standards in data processing.

ACM Background

ACM, the Association for Com-

puting Machinery, was founded in 1947. Among its purposes, it lists the promotion of a free interchange of information among specialists and among the public "in the best scientific and professional tradition." Its membership includes most of the major computer manufacturers (such as IBM, Univac, Control Data, National Cash Register, General Electric, and RCA), some 120 universities in this country and abroad, and approximately 23,000 individual members.

New Peripherals Firm To Show Its Products

NEWPORT BEACH, Calif. — Vanguard Data Systems, Inc., has been formed here to pursue various computer peripheral markets.

Alexander M. Bradley, Vanguard president, formerly was director of programming at Varian Data Machines. A.S. Gugliotta, the vice president, was director of engineering operations at Varian.

The company will show several products for the first time at the Fall Joint Computer Conference, Bradley said, adding that full production already is underway.

Patent Decision in Peril Following Judge's Death

WASHINGTON, D.C. — The time of Judge A.M. Smith's death may become a crucial factor in the future of patents for computer programs, it was learned here last week. Judge Smith died the same day that his Prater and Wei decision was released by the Court of Patent Appeals [CW, Dec. 4]. At the time it seemed his death would have no bearing on the case because the decision appeared to be unanimous. The statute requires that three judges approve a decision.

Later it emerged that the chief judge effectively had disqualified himself, stating that he had not

been able to study adequately the issues involved. It then became known that at the time the decision was issued, Judge Smith had been dead for some hours. This left a maximum of three judges in favor of the decision in the five man court. Any further dilution of the originally "unanimous" decision could undermine it.

It was expected that some appeal against the decision would be made, either in conjunction with, or separately from, the Patent Office intention of seeking reconsideration.

Extracts from the Prater & Wei decision appear on page 27.

Information System to Aid FJCC By Registering, Alerting Attendees

SAN FRANCISCO — An estimated 10,000 people attending the Fall Joint Computer Conference will be registered, tabulated, and alerted to messages by a new computer controlled graphics display system developed by GE's Information Devices Department.

The system will combine a GE 115 computer with video display terminals and television monitors. The system will provide, on request, attendance reports for

sessions, showing name, identification, hotel, and time of registration. The system will automatically flash message alerts by name at six second intervals on eight 23" television receivers located in various heavy traffic areas throughout the convention center.

Dr. Thomas Vanderslice, general manager of the GE department, estimates that the cost per registrant will "round out to about 50 cents."

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Office of the President

November 26, 1968

Mr. John M. Noerr, President
SHARE
c/o Computer Group
Sinclair Oil Corporation
600 Fifth Avenue
New York, New York

Dear Mr. Noerr:

I am very much concerned about the publicity given to and the interpretation placed upon certain remarks about Dick H. Brandon and the Brandon programming aptitude test made by our Mr. David B. Mayer at the recent Atlantic City SHARE/GUIDE meeting.

Mr. Mayer's references to the test were personal and were made in response to an interest expressed by the audience prior to his prepared talk. Mr. Mayer tried to be responsive to this interest with candor which was in keeping with the objectives of these meetings. We regret, however, that in passing personal judgment on the validity of the Brandon aptitude test he made comments which were interpreted by some members of the audience as an attack on the test, Mr. Brandon, and the Brandon organization.

IBM did not authorize Mr. Mayer's statements and does not endorse them. IBM has had an excellent relationship with Mr. Brandon and his company over the past years and has no reason whatsoever to question his or his company's business or professional ethics.

The area of testing is a very inexact science and we are well aware of the limitations of our own tests, for example. The Brandon test may well prove to be superior. We certainly hope in the interest of the industry that this will prove to be true.

We regret this whole incident and apologize for it. We ask that you publish this letter to the membership of your organization. A similar request is being made to Mr. Earl O. Althoff of GUIDE.

Sincerely yours,

Michael Larson
T. V. Larson

Copies of the above letter and an identical letter to Earl O. Althoff, president of Guide, were conveyed to Dick Brandon with a personal message from Thomas J. Watson, Jr., IBM board chairman.

Users May Be Allowed To Share Leased Lines

NEW YORK — Telephone users would be allowed to share leased lines under a new tariff the American Telephone & Telegraph Co. plans to file with the Federal Communications Commission.

AT&T said there would be a charge for sharing a line, but that such sharing would save the customers money. However, the tariff wouldn't apply to Telpak, wideband switching, and certain other communications switching services, AT&T said.

No Date Set

No date has been set for implementing the tariff, but AT&T said it probably would go into effect Jan. 1 when other new tariffs on foreign attachments are scheduled to go into effect [CW, Dec. 4].

AT&T said the shared lines would be particularly beneficial to small volume voice and data users.

An example of sharing would be a leased line between New York and Chicago used by several companies with offices in both cities. Each company would have its own terminals at each end of the line.

Computerized Billing

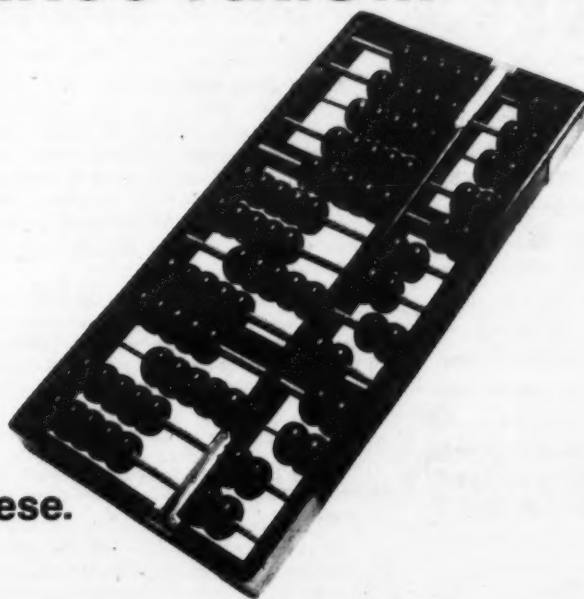
AT&T also announced that it is centralizing the billing for all long distance calls, collect calls, and toll calls charged to credit cards or a third party. The billing for all 23 Bell System companies will be processed on a computer in Kansas City, Mo. Input and output data will be transmitted at night when telephone traffic is light.



The Digitizer scans graphic material on the drum, left, codes the information, and places it on computer compatible tape.

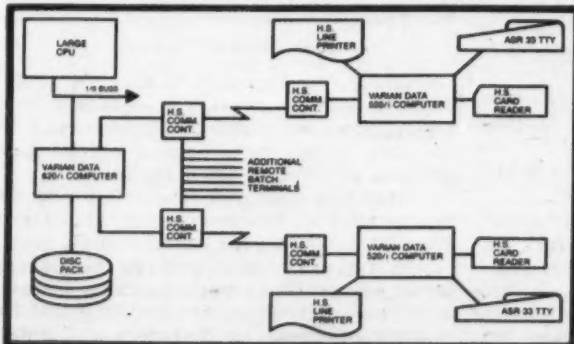
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Digitizer Scans Drawing, Codes Data for Input

PLAINVIEW, L.I., N.Y. — A Pictorial/Graphic Digitizer that can translate pictorial source material into computer language and record it directly on computer tape ready for data processing has been announced here by Aeroflex Laboratories, Inc.

Capable of accommodating graphic material and photography, both positive and negative, up to 8" by 10" in size, the Digitizer is useful in translating graphics which have line structure information, such as oscillograms and drawings.

For example, the printing quality of paper is analyzed by scanning a specially printed pattern. Appropriate data processing then extracts statistical information to establish quality control levels. Other areas of specialized use are in automatic digitizing of complex oscilloscope traces and storage and retrieval of graphic data or their transmission over communication links.

The output of the Digitizer is produced on computer compatible magnetic tape. It includes density information, plus X and Y coordinate data as reference to coordinates on the original picture.

Other features of the system include: high resolution up to 1000 lines per inch; accurate gray level encoding; adjustable scanning aperture; adjustable format sizes; bandwidth compression for graphic inputs; keyboard entry to record alphanumeric heading information, and fully automatic operation.

The unit sells from \$50,000 to \$75,000.

WHO NEEDS SPARTAN A.C.T.?

See p. 26

AR = Audio-Response

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Editorials

An Unfortunate Decision

The decision announced by the president of ACM that his society will play no active role in the arbitration of ethical disputes in our industry, but, instead, will refer them to some external "proper authority" must be deplored. The fact that he is able to cite two isolated references in the society's code of ethics in support of his decision does not mean that the matter should be closed there. Between the two references there is another, and very important, part of the ethical code which he has apparently ignored. This calls for all ACM members (presumably including the president) to oppose exaggerated claims, etc. Hiding one's head in the sand, as ACM is now doing, is hardly adequate.

In the past, *Computerworld* has urged members of ACM to decide whether they wish their society to be bound by its own rules. On page 5, we are printing for the last time a resolution, which some members have signed, which will bring the matter before the ACM Council.

Ethics are important even if they are uncomfortable.

A Virtual Success

The importance of the apparent success of virtual memories, reported in *Computerworld* this week, should not be underestimated. It may well be the most important item of the year.

The software system currently running on the IBM 360/67 at Computer Software System Inc. economically liberates, for the first time, a programmer from being completely bound by the size of the physical system he is using. It is now possible to run a program which requires a million bytes — on a system which has only a quarter of that capacity. Previously this was never possible. Memory size — memory physically present — has been such an absolute limit on the size of the program that we have rarely even thought of its importance. It just seemed to be a fact of nature.

Behind our liberation from this memory limit we can see at least three parents. The concept of virtual memory ably developed at the University of Michigan by Professor Bernard Galler, the designers of the IBM Model 67 associative memory, and the software design of the CMS/CP67 programs from the IBM Scientific Center in Cambridge, Mass., all were necessary for this achievement. All honor is due them. The immediate result of their work will be to put the firm of Computer Software Systems in a position not matched by any time sharing service we know of. But this is the least of their achievements. For it will shortly make available to the many, that class of "large programs" which they need but which they were unable to run. This means that the whole class of "large problems" has suddenly become much more practical than ever before — and computers are much more valuable.

That's the importance of this virtual success. Now, let's make this into a real success.

Are You Covered Adequately?

Losses Lurk in New Places

By Robert C. Dauer

Today, over 100,000 United States businesses delegate key functions to EDP service organizations. Unfortunately, many of these firms still have not amended their insurance programs in recognition of this new — outside — computer dependency. If your firm uses a data processing service bureau, you may face more serious exposures to loss — other than to equipment or hardware itself — than a firm with its own EDP installation.

To get some grasp of the problems involved, consider these questions:

1. What if your accounts receivable, payroll records, inventory records, etc., now in media form on the premises of a service bureau, were destroyed? Do you have backup material or duplicate media stored elsewhere?
2. Are you supplying the service firm with valuable papers and records that may be almost irreplaceable? Are these insured? And, if so, are you aware of the limitations under standard "valuable papers" insurance policies that may limit your recovery following destruction of records off your premises?
3. How long would it take — and what would it cost — to duplicate material in the hands of a service bureau if this material were lost or destroyed? Is your insurance program designed to cover this extra expense?
4. What is the nature of the work being performed by the service bureau? Could interruption of this work lead to a business interruption loss?
5. What is the data processing bureau's responsibility to you — if any? If you have signed a contract, are you aware of its provisions?

Who Is Responsible?

One of the problems in designing an insurance program to safeguard your interests when dealing with an EDP service bureau stems from lack of agreement on just where responsibility for any loss should rest. Service bureaus still have no clearly defined approach to this question. One major service bureau trade association is currently drawing up guidelines for a standardized client contract. However, such standardization is a goal — not an accomplished fact.

Many service bureaus do not use a written contract at all. Your relationship with the firm doing your work may be on a handshake basis. The liability of the bureau for any loss you suffer may have to be determined in court. Even among those service bureaus which do use contracts, the degree of responsibility accepted by the data processor varies. For example, some of the contracts we have seen stipulate that:

... the customer agrees to bear the risk of loss or destruction of punch cards and all other materials within the sole and exclusive possession of (the service bureau) irrespective of the cause of such loss or destruction whether negligent or otherwise.

This condition is often coupled with another which reads:

... such cards, tapes and other records to be furnished by the customer ... shall become the property of the (service bureau).

If you accept the fact that the processing center disclaims all responsibility for the media — punch cards, tapes, etc. — and backup material (photo-stats, original invoices, orders, etc.) you furnish, and wish to insure this material yourself, you will find few insurance companies willing to provide coverage. Of the companies that have been writing data processing policies, most gear their underwriting approach to the insurance of "hardware." Rates and underwriting acceptability have been predicated on such things as the type of installation, its location, etc. The St. Paul Fire and Marine Insurance Co. appears to be one of the few companies now willing to insure media, valuable papers, and the extra expense and business interruption loss that a firm might suffer due to loss or damage at a service bureau installation.

The practical solution to the problem of protecting yourself against loss of tapes, punch cards, and other materials furnished a service bureau is duplication and off-premises storage. Some service bureaus provide clients with duplicates of all media. A few stipulate — by contract — that the customer must retain this backup. Any such material should be stored carefully — off the premises of the service bureau — and updated on a regular basis.

The main point to keep in mind here is that when you deal with a service bureau, determine in advance

just what its responsibilities — and your obligations are.

Valuable Papers

On occasion, the service bureau will be furnished with source material of extremely high value that would be expensive to duplicate. Obviously, insurance of these valuable papers needs special attention.

"Standard valuable papers and records" insurance limits recovery for destruction of such property off-premises to 10% of the limit of insurance provided by the policy. The "valuable papers" insuring agreement of data processing policies contains a similar limitation. If you carry valuable papers and records insurance — under either a separate contract or as part of an EDP policy — make sure that this off-premises limitation is eliminated if you want adequate protection of papers in the hands of a service bureau.

Extra Expense

Your firm could be subject to a substantial extra expense loss if punch cards, tapes, or other material are destroyed while in the hands of a service bureau. Recently, for example, a credit firm provided a service bureau with important data on disks which were to be converted to tape for use in a different system. When the new system failed to meet the credit firm's needs, the firm requested the return of its original material (the disks) so that they could be processed at another bureau. Unfortunately, the disks had been destroyed in a fire. As a result, the credit firm had to keypunch more than 80,000 accounts at a cost of more than \$9000.

Fidelity Exposure

If a service bureau is processing your accounts receivable, payroll, etc., you may be faced with a serious fidelity exposure which is presently uninsured. It may be difficult for an employee of the service bureau — unaided — to tamper with your accounts. However, collusive losses involving your own employees and those of the service bureau are always possible. And, any loss traceable to personnel of the service bureau would not be covered under your fidelity bond unless it has been specially amended to cover this situation.

Errors and Omissions

Many service bureau contracts provide that the service bureau will not be liable for:

... any loss or damage resulting from any error or omission of (the service bureau) in performing the work which may be sustained by the customer, irrespective of the cause of such error or omission, whether negligent or otherwise.

If your firm is currently providing professional services to others — as consulting engineers, for example — you could face a substantial liability suit if a computer error caused you to furnish incorrect information to your clients. You may now be carrying some form of "professional liability" or "errors and omissions" coverage to protect yourself against this exposure. If so, make sure that your policy does not prohibit you from releasing the service bureau from liability.

Business Interruption

Would your firm suffer any type of interruption of business if records or media in the hands of a service bureau were destroyed? Such a loss might be possible, for example, if your production is geared to computer programming. Consider the "business interruption" coverage available under data processing policies.

Steps to Take

Obviously, the magnitude of this EDP problem depends upon your own use of outside service organizations. In evaluating what measures should be taken to plug any loopholes in your current insurance program, we suggest these steps:

1. Determine your own exposures to loss. What type of work are you now farming out to a service bureau? Check all departments of your company.
2. What type of information are you furnishing the service bureau? If you supply punch cards, or tapes, are you maintaining your own set of duplicates? Are you being furnished by the bureau with duplicate media which can be readily updated?
3. Where are your duplicate source materials and converted materials (media) now being stored? Should these be insured?

(Continued on Page 5)



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Viewpoint

Don't Be Told What's Right, Ascertain What's Right

By George Simon

Watching the language battle, "PL/I or IBM versus the world," I cannot help but comment on the sad state of affairs in our industry wherein manufacturers seem to dictate everything we use to perform our "professional" functions.

Yes, "professional" is in quotes, because you and I, as well as the majority of practitioners, managers, systems men, and programmers have not fulfilled our functions as true "professionals." We belong to groups, organizations, associations, and grant special certificates attesting to our professional nature and abilities. However, being creatures of habit, and human, we are more interested in our own careers and desires. We select our jobs and equipment, past, present, and future, with 90% of the emphasis on the hardware, operating system, and languages that are most widely used without ever once stopping to ask the following questions:

Is it what I really need?
Is it really easy to use?
What happens to the people performance/cost ratio if I use it?

Shouldn't the people/machine interface become easier?

Why have all these special training courses in operating

systems and the like, given by software houses, sprung up?

Why am I using a hexadecimal decoding gizmo?

Why am I being sold another language when the ones I have now have not been fully implemented or efficiently constructed?

Why must I have legions of OS, TOS, DOS, Easycode, MVT, CCAP, BTAM, Systgen, and GCL experts just to get my job done?

Weren't we supposed to do

everything just knowing Cobol?

Where is the machine independence we have talked about? We hear talk about fourth and fifth generation software and equipment or evolutionary expansion of the third generation. Are we going to be in a similar position then, with a rectangle instead of a wheel to move forward in the EDP industry?

Have you really analyzed the manufacturers' support in terms of "coins of the realm?"

It is up to each and every one

to use a little introspection. Stop for a moment. Reflect and evaluate yourself, your group, company, or association in the light of the foregoing questions. Act as a "professional." Rather than be told what is right, ascertain what is right.

Are you buying whatever is offered? Can you stand up to the manufacturer in front of your own management because of your knowledge and ability, or are you beholden to the manufacturer for your liveli-

hood? It is time to dig deep, even though it hurts.

It's high time the mystique, costs, and personnel demands of using EDP came down to reality, and true professionalism became as widespread as BAL.

The author is manager of systems and data processing for the National Starch and Chemical Corp., New York. In the next issue, he will give his own answers to the questions he poses in this article.

Letters to the Editor

Share Complaint

To the Editor:

The Nov. 6 and Nov. 13 issues offer so many opportunities for comment that it is difficult to know where to begin. PL/I, Share, and IBM seem to share the honors as targets of your unsubstantiated, slanderous bar-room gossip. But let's discuss Share, since I figure IBM and PL/I are big enough to take care of themselves.

Referring to the editorial "Let Just Users In!":

ITEM: Share members are installations, not individuals (with

one exception that I know of). Attendance at Share meetings is not limited to Share representatives. Indeed, I know of meetings where the attendance from a single installation approached the 100 mark. There are some economic facts of life which tend to limit the number of Share attendees. First, it costs money to feed and house a man for a week. Second, the most important, Share attendees, as a class, are "doers," and their absence from work is apt to have a noticeable effect on the sponsoring installation.

ITEM: The ratio of 1000 users

per representative is not surprising when one considers that the United States House of Representatives is based on a ratio of 400,000 to one!

ITEM: Share membership involves a commitment of manpower which some users of IBM equipment choose not to make. Indeed, failure to meet this commitment has been the basis for discontinuing many Share memberships. As an ex-program chairman and an ex-member of the board, I can assure you that the commitment is of the order of one to three man-months per year.

Now a few comments on your blurb on page 2 of the Sept. 13 Computerworld. As a member of the nominating committee this year, I take exception to your snide remarks concerning the winning officers.

ITEM: A primary criterion for candidacy (and the most difficult one to satisfy) was the willingness and ability to commit the required amount of time. Many otherwise qualified individuals could not accept nomination because of the amount of time and travel involved.

ITEM: Your remark which relates Share tenure to success in the election is totally unfounded, Messrs. Theberge and Roessler are relative newcomers to Share. The other officers are indeed "oldtimers," as evidenced by their long records of participation in Share committees and projects.

If you have any evidence to

refute my remarks I would be pleased to hear it. Otherwise, I think that Computerworld must apologize to the Share body for its ill-advised remarks. A personal apology is due to the individuals who were slandered by your publication. Perhaps such an action would help elevate your paper to the status of a news medium from its current level as a gossip sheet.

Paul R. DesJardins
Long Beach, Calif.

Reader DesJardins should realize that responsible newspapers, like Computerworld, gather a lot of supporting material which is rarely published (because it would be uninteresting).

Re Share membership: We are glad to have DesJardins' confirmation that Share membership is not open to users as such, and is often prohibitively expensive.

Re the Share election: Computerworld stands by its descriptions, which were given in a straightforward manner and were far from being unsupported. They were based on hours of interviews, actual participation in the Share election operation, and on documents issued by DesJardins' committee. We examined the election results for trends toward academic, scientific, or commercial interests, ACM, DPMA, and IEEE membership, etc. The only significant trend which we found was that among candidates for each office, the candidates who had the longer Share biographies were most often the winner. Ed.

Is Your Insurance Really Adequate?

(Continued from Page 4)

4. Examine carefully, your contract — if any — with the service bureau. Be sure you know what is expected of you as a client and what you can expect of your data processor.

5. Remember that when you deal with a service bureau your exposures to loss in the areas of media, valuable papers, extra expense, business interruption, and fidelity are no less than they would be

if you had your own data processing equipment. And, because your papers and records are, to a large extent, out of your control, your exposure to loss may be far greater.

The author is president of the Shelby Publishing Corp., Wellesley Hills, Mass., and executive editor of The John Liner Letter, an insurance newsletter for insurance men and business executives.

Clip and Send In To San Francisco

Petition Calling for Vote on ACM Ethics

As pointed out in the news story on page 2 and in the editorial, "Unfortunate Decision," on page 4, the Association for Computing Machinery is now taking the attitude that its ethical guidelines are only "suggestions" for behavior and that it will not arbitrate ethical disputes between ACM members.

The petition below, which already has been signed by some ACM members, could cause a membership vote on the question of whether the ACM should handle ethical matters. If the membership approves the resolution by a simple majority, the resolution will become binding on the ACM Council.

These petitions will be submitted to the ACM Council at the Fall Joint Computer Conference. If you would like to add your voice in this matter, please sign the petition and bring it to Computerworld at Booth 519, Brooks Hall, San Francisco Civic Center, or mail it to Computerworld, St. Francis Hotel, 335 Powell St., San Francisco, Calif. 94119.

We, the undersigned voting Members of the Association for Computing Machinery hereby petition the Council of said Association that the following resolution be submitted to mail ballot of the entire membership of the Association as provided in the Constitution and Bylaws of said Association.

Resolution

WHEREAS, on November 11, 1966 the Council of the Association for Computing Machinery adopted guidelines on Professional Conduct in Information Processing, and

WHEREAS a complaint that the Association is not following its own guidelines was made before an international computer forum by a member of a sister computer society, and evidence said to support the complaint was there identified, and

WHEREAS the good name of the Association and/or of all its members is imperiled by the lack of any explicit provision that the Association is bound by its own guidelines and by the lack of any effective procedure for the investigation of such complaints against the Association or any of its members.

NOW, THEREFORE BE IT RESOLVED that the ACM guidelines for Professional Conduct in Information Processing shall apply to the Association, and to all persons when they are acting for the Association, whether members of the Association or not, as well as to all members of the Association, and,

BE IT FURTHER RESOLVED that the Council of the ACM shall forthwith establish an effective procedure for the determination of, and a report to the membership on the validity of the above mentioned complaint, and of such further complaints which may be made in the future.

(Member Signature)

(Member Address)

TLW Computerworld Corner		
COMPUTERS FOR SALE	INDUSTRY	
Item 1: 360/20 C1, 8K, 2560 A1, 2203. AVAILABLE 30 days.	Construction	
Item 2: 360/30 Mod. F, 1051-1, 1052-6. AVAILABLE 11/68.	Aerospace	
Item 3: 1401 C4, 1402-1, 1403-2, 1406-1, 4-729 II's. Advanced Programming, Print Storage, Numerical Print, Hi-Lo Equal, and others. AVAILABLE 11/68.	Food	
Item 4: 1401 C4 8K with 1402-1, 1403 and 3-1311's. AVAILABLE 90 days	Manufacturing	
Item 5: IBM 1406-1 Storage. AVAILABLE Immediately.		
Item 6: IBM 1401 E5 12K with 4 7330's. AVAILABLE 30 days.	Banking	
Item 7: IBM 1620 with 1622-1 (1623 optional) AVAILABLE 30 days.	School	
List your computers with us. Box 29763 Atlanta, Ga. 30329 (404) 633-2579		
Ask us about programs available with computers.		
		

Machine Enclosure Reduces Keypunch, Typewriter Noise

SANTA ROSA, Calif. — A machine enclosure which can handle most keypunching and typing equipment has been introduced by Gates Acoustinet Inc. Available with interior widths varying from 37" to 74", it does not require any installation as it is shipped ready for use. The enclosure is designed to reduce noise in the immediate area. One of the arguments in favor of the work station, as opposed to acoustic walls, is that it reduces the noise reaching the operator and nearby workers.

The new 750 Series was developed to offer the customer an acoustical enclosure for business machines that is also attractive. The Gates Acoustinet Model 750 is actually a portable "work station" with excellent lighting and a variety of shelving to provide the customer with the most efficient use of the work space possible.

The firm's address is Box 1406, Santa Rosa, Calif. 95403.

Data Couplers



A new line of portable acoustic data couplers, Model 260 and 300, may be used on a standard telephone as a communications tool for terminal to computer operations and for data conversations or information input/output between two terminals, as well as for coupling a remote terminal to a time sharing computer. Dura, Division Intercon-

New Products

tinental Systems, Inc., 2600 El Camino Real, Palo Alto, Calif. 94306.

EDP Room Door



A power operated, double sliding door similar to those used on subway cars has been designed for computer rooms. It is claimed that EDP room temperatures and humidity levels are maintained by the door's high speed opening and closing, and that a perimeter seal prevents drafts. Large windows prevent collisions. The user has a choice of air or electric power, automatic controls, and color finish. Clark Door Co. 69 Myrtle St., Cranford, N.J. 07016.

Microfilm Plotting

A new GRT (graphic recording terminal) microfilm plotting system is designed to reduce computer and programming time by incorporating a small general purpose computer. The new Model 840 microfilm plotting system

operates on-line with a Honeywell 516 computer. Plotting instructions are introduced into the computer from magnetic tape data generated by a central computer and by executive routines entered via keyboard. Microfilm recording is provided in either 35mm or 16mm format. Basic software allows use of the computer tapes for a line printer. California Computer Products, Inc., 305 N. Muller St., Anaheim, Calif.

Flow Chart Symbols



A compact symbol system, Pro/flo, has been developed for programming, system flowcharting, and documentation. Three sets are available from \$42. Custom symbols can be manufactured for larger than standard size or for personal symbols and signs. Pro/flo Custom System Symbols, 703 Hamilton Dr., Champaign, Ill. 61820.

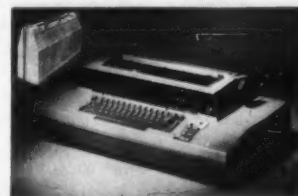
Marking Device

A new marker, the Sharpie, is designed to leave a permanent mark on data processing accessories. Available in a chromatic range of colors, the ink is reported to be waterproof. Sanford Ink Co., Bellwood, Ill.



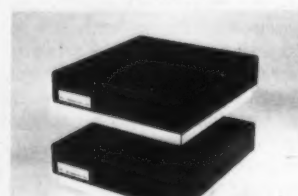
Gates Acoustinet Model 750-65

Portable Terminal



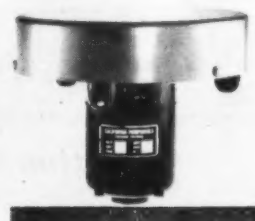
A portable typewriter terminal, Model 1021, is compatible with any computer using extended BCD interchange code and with IBM 2740 series terminals with no change in software. Unit features include reverse index, an interrupt key, vertical parity check, non-print/non-escape, and interchangeable typing spheres. The unit also can serve off-line as a typewriter. Rental price is \$88 per month including service. Dura, Division Intercontinental Systems, Inc., 2500 El Camino Real, Palo Alto, Calif. 94306.

Data Sets



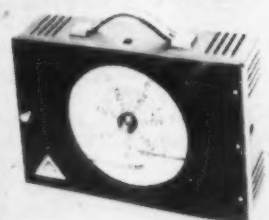
New data sets, Modem 4400/20H and Modem 4400/20L, transmit two separate high speed 2000 bpi messages at the same time over a single telephone line. Each message stream is transmitted independently. The data sets are based on a narrow band technique of transmission. International Communications Corp., Miami, Fla.

Drum Memory



A new drum memory system, Model 588, priced from \$800, is for use in data terminal and test equipment applications. Memory capacity is reported to be 100,000 bits with an average access time of 8.5 ms. Optional write/read electronics are available. Delivery is 45 days. California Peripherals, 18758 Bryant St., Northridge, Calif. 91324.

Humidity Recorder



A new mechanical clock driven recorder provides 24 hour or 7 day records of both temperature and humidity. The "Serdex" circular chart recorder registers on 6" charts in 2% divisions over ranges from 15% to 95% relative humidity, and temperatures from 0 to 100° F. Bacharach Instrument Co., 625 Alpha Dr., Pittsburgh, Pa. 15238.

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Time Share Corp. Waltham, Mass.
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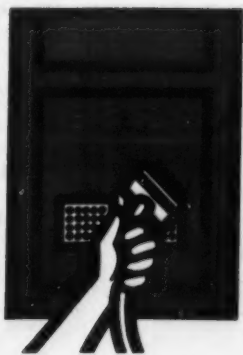
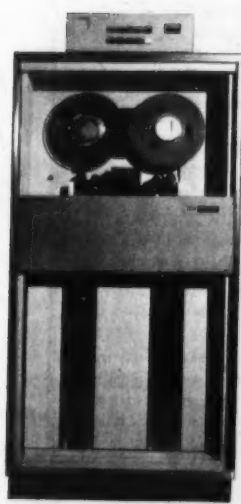
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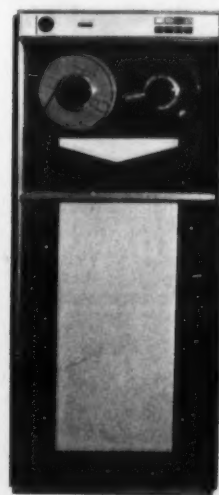
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AMPEX

'Scope' Completes First Year Of Fighting Crime in Nevada

By a CW Staff Writer

LAS VEGAS, Nev. — One of the country's most complete law enforcement systems will conclude its first year of full, on-line operation this month.

Scope (Sheriff's Computer Operation for Protection and Enforcement), implemented for the Clark County Sheriff's Department by the county's division of Management Information Services, has attracted attention and visits from police officials in other areas.

The system provides a series of nine reports and maintains a Master Record Index file that enables a patrolman to make a quick background check on a suspect.

The reports include:

- Activity Log, a record of all incidents reported to the sheriff's office during a 24 hour period. This is similar to the traditional "police blotter."

- Radio Log, a record of all radio traffic for a 24 hour period.

- Code 7 Property Watch Report, which provides patrol units with current listings of premises that require special attention because of vacation, theft, threats, etc.

- Detective Bureau Case Status Report, a semi-monthly

record of the current status of cases.

- Statistical Summary, a semi-monthly analysis of the frequency of each type of crime, indicating patrol area, time of day, day of week, and highest occurrences. The summary also is used for scheduling patrols by the Special Enforcement Detail.

- Premises Summary, a semi-monthly report listing the type and frequency of crime activity occurring at special premises. The data is sorted by premises, so that scattered incidents are brought together in the list, pinpointing trouble areas. The summary also is used for scheduling patrols by the Special Enforcement Detail.

- Detective Activity, a monthly summary of detectives' daily reports, including arrests, citations, court time, miles driven, overtime, and property value recovered.

- Property Watch Summary, a summary of Code 7 property watch patrol activity.

Conversion Cost \$35,000

Jack Edwards, a systems analyst in the county's Management Information Services division which designed the system with help from IBM, told *Computerworld* that the overall cost

for the conversion of Scope to on-line operation was \$35,000, with the Sheriff's Department allocating approximately \$6500 a year to data processing rentals and services.

"It might also be worth noting," he said, "that Clark County initiated its own system and has been the sole supporter in the financing of this complex operation."

Edwards said that Scope, first shown in operation at the National Sheriffs' Convention here in June, 1967, was started with the Radio Log and Patrol Activity systems. Full operation began last December.

Scope uses a 256K IBM 360/40, four 2400 series magnetic tape drives, five 2311 disk drives, and a 2321 data cell. Input/output is handled with a 1403 printer, a 2540 card reader-puncher, two 1050 terminals, eight 2740 terminals, and six 2260 video display terminals.

Access Limited

Edwards said that to protect the data from unauthorized access, the Sheriff's Department has adopted the Faster system.

"The capabilities of Faster are divided into two parts," he said. "First, protection built into the system itself, and second, pro-



A sergeant in the sheriff's office uses an on-line terminal to get information from Scope's files.

tection which can be added by the user through the use of macro language and functional capabilities of Faster."

"Through programming, only authorized people can use certain terminals and have access to the department files," Edwards said. "Each operator is given a code name and only when the code is used on the terminal will information be released."

Master File 'Most Important'

"The most important job handled by the computer is the Master Record Index file," Edwards said, adding that the computer was capable of retrieving information for a background check in three to 15 seconds.

"The file [containing more than 450,000 names] is quite complete and thorough because each person who works in the large gaming [gambling] industry, public offices, or who has been brought to the attention of the Sheriff's Department must register with the Identification Department," he said. "Each person who registers is checked through the FBI files and the California Investigation and Identification Department."

"Another unique factor... is the Property Watch, which assures the public protection against burglary, property damage, etc. if a person plans to leave on vacation or happens to be away from home for any reason," Edwards said. "This program also assures a systematic surveillance of property in the Clark County area."

A printout of information from the property watch also indicates to patrol shifts people or property needing extra attention due to threats.

In the future, the Sheriff's Department plans to incorporate gun registration into Scope, Edwards said.

PROPERTY WATCH LIST				4-27-67	PAGE 1
NO.	ADDRESS	AREA	1	INFORMATION	
86	3673 PROCYON AVE.	AMER.	FENCE	L* NONE V* NONE O* DUE TO 414 & 411 O* SPEC. ATTENTION DARK HOURS	
91	2126 DAUPHINE WAY #5			L* NONE V* NONE O* BOB ECK, WMA27, RESIDING AT #5 O* HAS THREATENED TP REMOVE ALL O* FURNITURE. IF OBSERVED, NOTIFY O* MGR.	
87	140 ALBERT #3 AND #7			L* NONE V* 61 CAD BLUE O* A & B ON VICT. SAMUELS	
79	1674 PAWNEE			L* NONE V* NONE O* THREATING PHONE CALLS	
88	5028 BLANTON DR.			L* NONE V* CHRYSLER BLACK V* 60 DODGE GREEN O* SGT. HARLYN THOMPSON WILL P/U MAL	
90	5203 TREASURE			L* OUTSIDE FRONT PORCH V* NONE O* THREATS FROM X-HUSBAND O* 64 COMET 2DR BROWN CALIF LIC	
89	2529 MEADOWS			L* OUTSIDE V* NONE O* 425 SUBJ. HOME NOW VACANT	
92	4354 CALEMESA			L* NONE V* 67 CHEV FLR O* P/R STAYING AT 10-20 NIGHTS	
94	4662 E. LAKE MEAD			L* NONE V* 66 CHEV GREEN W34984 O* X-HUSBAND WARD OLSEN SR. WMA52, O* 5FT 11 IN 165, BLUE, BRN O* DRIVING ABOVE VEHICLE HAS O* THREATENED TO KILL P/R	
TOTAL				9	

The property watch list tells the patrolmen whether any lights have been left on, what vehicles belong at the premises or should be watched for, and gives an explanation of the situation.

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Validation System Helps Mobil Catch 'Hot' Cards

NEW YORK — A computer system that stacks the deck against credit card sharps who use stolen and lost cards to swindle consumers, retailers, and industry out of millions of dollars a year is now in operation for Mobil Oil Corp.

A key feature of the new system is its ability to help locate missing credit cards even before their owners know they are lost or stolen.

An operator at Mobil's Cherry Hill, N.J., computer center runs a validation check on a credit card while a dealer waits on the telephone for the answer. Pick-up orders on "hot" cards contain the qualification "... if name is" so-and-so, which serves as a check that the operator or the dealer has not made a mistake in the account number being checked.

When a purchase over a set amount is made at a Mobil station, the dealer checks the customer's credit card by calling a regional center on a special telephone line. An operator relays the card number and other data to a central computer, which checks the card's status and flashes it back to a CRT terminal at the regional center. The operator then tells the dealer if he can make the sale. The entire operation takes about 20 seconds.

Successful Test

"We are confident that this system can cripple the growing fraudulent credit card racket," said Paul Guernsey, manager of Mobil's Travel Services Department. Mobil tested the new system in 8 states before going nationwide. In the test area, it proved itself to be extremely effective in halting fraud.

Mobil believes it is the first oil company to utilize a computerized system nationally. American Express uses an audio response system which allows direct communication with the computer via push button telephone.

An important feature of the program for the average card holder is an "early warning system" which makes it possible for the computer to locate stolen or lost cards even before their owners are aware of their loss. This is of particular significance for families or businesses holding several Mobil cards with identical account numbers. In this situation, it is possible for one card to be lost without being immediately missed.

Setting the Trap

The computer locates these cards by noting all charges over a given amount. When the total of any account tops a set figure within a certain period of time, the card holder is immediately contacted by telephone. If it develops that one of his cards is missing and is being used by someone else, the computer is programmed to flash a "stop credit" signal on that account number, and the card holder is no longer liable. He is immediately issued new cards and a new account number.

Also important, according to Guernsey, is the fact that it takes only seconds to enter a new "hot card" number. With the old hot card list technique, considerable time could pass between the time a card was first reported misused and the time dealers could be alerted to it.

Guernsey said approximately 15,000 Mobil credit cards are reported lost or stolen each month. "Of course, only a small percentage of these cards is actually misused," he added.

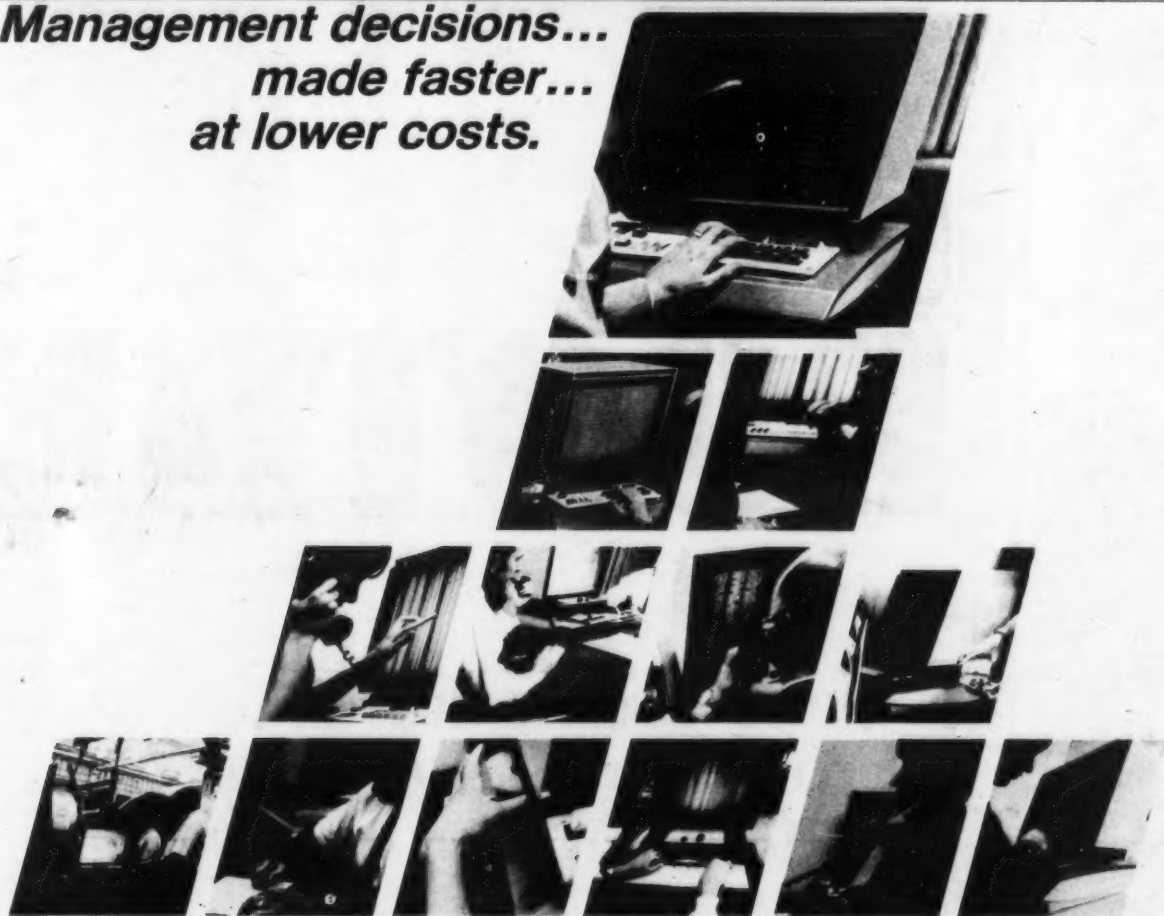
Mobil dealers can get several messages relayed from the computer. "Credit O.K." means exactly that. "Stop credit, pick up card" means the card is "wanted" and the dealer can earn a \$25 reward by sending it to Mobil.

"Verify identity, name should be _____" is used when a family or business has several cards with the same number and names, and one is lost. In this case, the dealer asks for the customer's driver's license and compares the name on the card with the name on the license. If they match, he can make the sale. If not, he picks up the card for a reward.

"Credit card crooks almost always pull a disappearing act when dealers take so much as a second look at hot cards," Guernsey said, "so we warn our people not to play hero with overly belligerent characters."

Mobil's new credit safeguards also will apply to credit cards issued by other oil companies which are honored at Mobil stations. This is done through a central clearinghouse operated by several oil companies, and providing rapid cross-reference.

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Everyday's a new day. With new objectives to reach. New business to obtain. New decisions to make. Which is why the information you get from your computer must be fresh, and easily accessible. But is it?

Paper printouts can't keep pace with modern information needs. Reports take at least 10 times longer to generate than they should. Retrieval is equally slow. In short, much time and money is wasted using paper methods.

Now there's a faster, more economical way of handling computer output. It's called Micromation—a development of Stromberg Datagraphics.

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of thousands of pages can be retrieved in seconds! When needed, paper copies can be made at 2 a second.

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Timely Decisions. First came the computer—and from its information, new opportunities for productivity, growth and profits. Now comes Micromation—a significantly better way to get that information out of the computer and distributed for timely management decisions.

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The 16-bit 706 has both word and byte instructions and memory organization for maximum programming and storage efficiency with character and word data.

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RAYTHEON

New Products on Display at FJCC

130 Manufacturers to Exhibit Their Latest EDP Equipment

SAN FRANCISCO — The Spring and Fall Joint Computer Conferences give manufacturers a chance to show off their newest products and applications. The FJCC opening Dec. 9 will be no exception. At least 130 firms will be exhibiting.

Listed below by category are some of the new products and applications that will be shown in the Civic Center.

New Computers

A telephone link will be used to demonstrate the batch terminal capabilities of the Varian Data 620/i and 520/i computers.

Located in the Varian reception area at a Nob Hill hotel, the 620/i will act as a central batch terminal. Its function will be to receive batches of data from remote sources, store the information in a temporary bulk memory device, and then feed the data to a larger computer in the most efficient order and format possible. The company estimates that this approach could "increase the efficiency of a major computer installation by 40% or more."

The remote data sources will be 520/i computers located in the Varian booth in the Civic Center. The 520/i will act as a remote batch terminal, collecting information from, or transmitting information to, such devices as card readers, tape units, line printers, and teletypes. The 520/i will be connected by standard voice grade duplex telephone lines to the 620/i at the hotel.

Several new systems are being introduced for the digital analog/hybrid market.

Electronic Associates, Inc. will introduce three new systems, including a full scale, 294 amplifier system with eight channel recording; a desk top model with 80 amplifiers, pre-wired for expansion; and a digital machine with 32K memory and 16 bit words. The digital machine has a 1.65 microsecond memory cycle and is capable of handling multilevel interrupts for up to 64 peripheral devices, EAI said.

Another new product being shown at the FJCC is Mac (Multi-Application Computer). Introduced by Lockheed Electronics Company, this machine has 16 bit words in multiples of 4K from 4 to 65K. The system has a 1 microsecond memory cycle and three data channels with up to 255 device addresses. The system will sell for \$11,950.

CRT Displays

Several companies are introducing or displaying new CRT equipment this year. Conrac Corp. will probably have the largest section on displays, since they are showing their CRT terminals, scoreboard displays, computer driven television monitors, large scale numeric displays, and election return equipment for television.

This type of equipment is now in use at network television studios and baseball parks, and is supplied to

many major computer manufacturers on an OEM basis.

Another contender for displays is Computek, Inc., which is introducing a new stand alone CRT display with both alphanumeric and graphic capabilities. This terminal, a member of the new Series 400 family, sells for less than \$12,000. The Model 20 includes a storage type CRT, an alpha input keyboard, curve and vector generators for graphics, a character generator for alpha, and interfacing for standard modem units. Various optional character sets, templates, and overlays will be offered with the Model 20.



Computek Display

The new Idiom interactive graphics system, announced by Information Displays Inc., combines the ability to use a large display screen with a highly flexible, functional keyboard, thereby giving the operator a high degree of flexibility. The system includes complete software, as well as hardware, and operates with a standard teletype unit and its own computer. The computer is available from 4K 16 bit words up to 32K words of programmable memory. The system can operate either free standing or tied to a central computer. The price of the system is \$89,515.

Data Transmission

A new modem with a capacity of up to 1 million bits per second has been announced by International Communications Corp. It operates above the 9600 bit per second range, with full flexibility.

"One of the primary markets for our ultrahigh speed data set is in computer installations that require movement of large amounts of data in concentrated areas," the company said. "This is essential to volume manufacturers, such as the automobile, steel, and chemical industries, as well as time sharing."

Plotters

The new plotters are in the lineup for the show. The first, from Electronic Associates, Inc. is, "the world's first hybrid operated digital plotter." It plots continuously nonsegmented at speeds up to 20 inches per second and operates with digital accuracy, EAI said.



Computer Peripheral's Disk Memory

The second plotter will be introduced by California Computer Products, Inc. It uses a stored program technique to go from CRT to microfilm, and operates on-line from a Honeywell 516 with magnetic tape. The plotting instructions are introduced to the 516 from compacted tape generated by executive routines under control from the keyboard. There is also an optional CRT display for displaying plotter output on-line.

The microfilm records are in either 35 mm or 16 mm, and the system has the capability of being used as a high speed printer at an average rate of 1200 lines a minute with 132 character print lines. Calcomp will also be displaying its large, flatbed plotter and its Zip mode drum plotter.

New Memories

The main area of concentration in memories seems to be in modular disk memories. Computer Peripherals Corp. will debut its DSU-1800 disk memory, with a capacity of either 25 million or 50 million bits with the head per track structure. One drive can handle up to four disks, with an average access time of 16.7 milliseconds.

There is an economy model, where one head can service four tracks, with an average access time of 25 milliseconds. The transfer rate is 3 MHz in bit serial mode. The heads are mounted as flying heads, with a sealed module for each disk. The system has a fail safe protection feature which withdraws the heads whenever there is any variation in speed, voltage, or air pressure.

Two high speed compact core memories are being introduced by Fabri-Tek Inc. The 370 and 420 memories are both ferrite core memories. The 370 uses modules of 4K by 40 bits, with access cycle times from 1.5 to 0.75 microseconds, and the modules can be combined up to 16K.

Fabri-Tek's other entry is a low cost, 4.0 microsecond memory with a 600 nanosecond access time. The 420 has a storage capacity of 1,024 words of 8 bit length. Of particular interest, according to the company, is the display of Sylvania's new Kartrack system, using Fabri-Tek memories with Sylvania scanners.

Digital Development Corp. will be displaying its DDC 73 Series modular disk memories. These memories are inert gas enclosed flying head disks with the head per track structure.

Time Sharing Services

Time sharing systems using small, medium, and large scale computers and CRT displays will be on display from Digital Equipment Corp. DEC is also showing the work being done with its systems at the Stanford



Idiom Interactive Graphic Display

(Continued on Page 13)

Interested in leasing a...

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Contact National, one of the nation's leading Computer Leasing Companies, for the most favorable long or short term program possible.

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ADS PAGES
28, 29, 30 AND 31

Highlights of the Conference Sessions

(continued from page 13)

Session 40, "Progress in Displays," will deal with the effectiveness of information displays and the technology of displays. Programming for interactive displays and their uses and the challenges of display technology will be discussed.

Wednesday Morning

Session 41, "Computer Generated Pictures - Perils, Pleasures, and Profits," will examine the problems and developments in computer generated art and computer animation of figures.

Session 42, "New Trends in

Programming Languages," will examine the environmental design of a compiler to create compilers and the use of displays to assist program composition and editing.

Session 45, "The Computer Field: What Was Promised, What We Have, What We Need (Hardware Session)," will look at what has been promised and what has been delivered in high speed memories, interrelated hardware and software, and character recognition.

Session 46, "Real-Time Information Systems and the Public Interest," will discuss international information services, real-time education, and the philosophy of public information systems.

Session 47, a panel discussion, will deal with "Computer Design Automation: What Now and What Next." The use of computers, from both the hardware and software points of view, in the area of computer aided design will be examined.

Special Sessions

There will be several night ses-



Norman R. Nielsen, Stanford University, is chairman of Session 42 on trends in programming.



Ascher Opler, IBM, is chairman of Session 45 on hardware.

sions, and many discussion group meetings after normal sessions are completed. For information about these sessions, contact the special interest groups through the AFIPS Information Center.

One of these special sessions will be aimed at the financial community. The "Security Analyst Session" will have as its theme, "Trends in the Computer Industry." It will be given by Information Management Inc. Subjects will include computer leasing, peripheral manufacturers, time sharing, software, and the potential market for large and small computers.

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COMPUTER CORPORATION of AMERICA

565 Technology Square, Cambridge, Mass.

Northeast Airlines to Install 'Pars' System

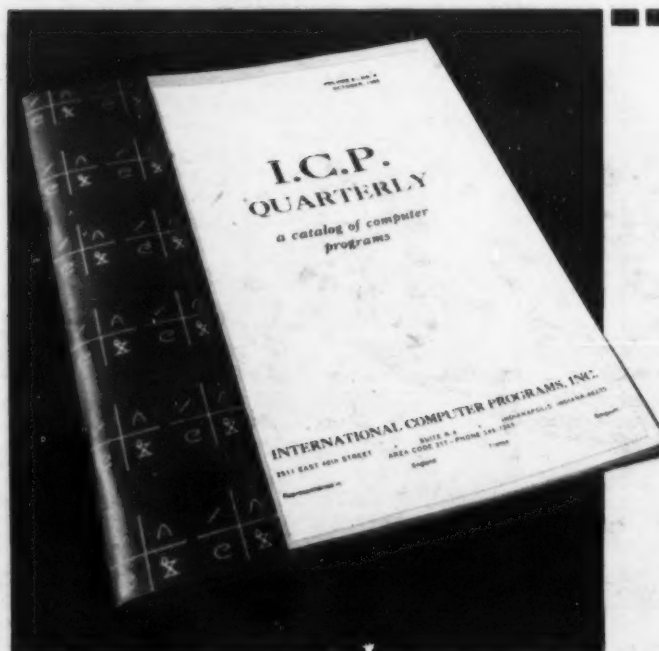
BOSTON—Northeast Airlines is reorganizing its reservations

operations to include IBM's Pars (Programmed Airline Reservation System) which the line will put into service in mid-1969.

Northeast has one IBM 360 in its Andover, Mass., data processing facility and is acquiring two additional 360 systems to handle Pars.

WHAT DOES SPARTAN
A.C.T. MEAN TO YOUR
BUSINESS? See p. 26

T = Telephone
AN = Alpha-numeric



NOW! one source for

PROPRIETARY PROGRAMS—The ICP Quarterly, updated with additional programs every 90 days, lists any program, for any computer, in any language, from any source. Programs are keyword indexed for type of program (commercial, utility, scientific, engineering, etc.) and there is also an index by hardware.

PROGRAMMING HOUSES—A roster of companies that perform contract programming is included in the ICP Quarterly. If you cannot find a program in the Quarterly that meets your exact requirements, the Programming House Roster will provide a list of firms which furnish programming service on a contract basis. Each firm is listed by company name and address, name of person to contact, capabilities, specialty area and size of staff—all the information needed to make an initial evaluation.

TIME-SHARE COMPUTER INSTALLATIONS—More than 30 parameters of time-share installations are listed, with emphasis on the programs and languages of each.

■ The ICP QUARTERLY, published and updated every 90 days, is the leading software directory. The QUARTERLY lists over 800 programs that are documented and/or supported so as to be operable and usable... and this list is increased at least 25% with each issue.

The ICP QUARTERLY acts only as a medium of communication between buyer and seller. The publishers of the QUARTERLY do not broker the contents of the catalog... therefore, there is no bias or preference towards any single manufacturer or program.

● SAVES MONEY — In most cases, a proprietary program can be secured for less money than it

would take for you to create a similar program of your own. And, the program is documented and/or supported so as to be operable and usable.

- KEEPS YOU UP TO DATE WITH YOUR INDUSTRY — The QUARTERLY keeps you abreast with what is available and what changes are taking place in the software industry.
- SAVES TIME — The QUARTERLY tells you if another company has developed a program you might be planning.
- A READY MARKET FOR SELLING YOUR PROPRIETARY PROGRAMS — Any program, documented and/or supported to be operable can be listed without charge in the ICP QUARTERLY.

This helps you minimize costs of selling programs, giving you a larger return on your investment.

If you have ever tried to locate a program, programming house or time-share installation, you know that it is a time-consuming and often costly process. The ICP QUARTERLY makes it simple, quick and inexpensive. Simply look in the index, turn to the section of interest, and find what you need instantly. The ICP QUARTERLY can cut the buying and/or selling process to only one telephone call or one letter. WE'LL PROVE IT! If you are not entirely convinced that the ICP QUARTERLY is a valuable addition to your operations, return it without obligation. Write for complete information.



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VIATRON System 21 will set new records to cut data input costs in half

Continuous formatting makes filling out a single record, 500 different records, or 500 sequential records a matter of filling in the blanks. As each record is completed, the next format is displayed.

System 21 is the only on- or off-line data entry system to provide "fill-in-the-blanks" formatting for only \$39-a-month. With a System 21 desk-top station, ordinary clerks can prepare computer input without special training.

But this does not mean that System 21 can be used only for simple, routine operations.

You have almost unlimited formatting capabilities. New formats can be created directly from the keyboard. Or, up to 500 different formats can be stored on a single VIATAPE cartridge placed into the console of the System 21 microprocessor. Each of these formats provides a visual framework within which a standard 80-character data record can be written.

Control records covering different formats can also be created, stored and displayed.

If the data to be entered is too long to format on a single record, sequential formats can be called up. This reduces complex data entry jobs to a simple step-by-step operation that any clerk can handle.

Provides both card and tape input

Once data has been recorded on a reusable VIATAPE cartridge, it can be automatically converted to either punched cards or IBM-compatible tape. System 21 is the only data entry system that can prepare input in either mode as well as provide on-line data entry over regular telephone circuits.

Data output capabilities, too

System 21 is bidirectional. The same desk-top

data station that's used to prepare computer input is also an output terminal with search and retrieval capabilities. The same translators that convert VIATAPE to cards or IBM-compatible tape also convert tape and card to VIATAPE that can be displayed at any System 21 station. In addition, System 21 includes a unique printing attachment that converts any IBM Selectric typewriter to an efficient data printer in seconds.

The significance of VIATRON prices

The real significance of VIATRON prices is not the \$39 monthly rental for a desk-top data station that replaces keypunch/verifier and key/tape operations, but that these prices make it possible to decentralize and debottleneck the entire input/output process.

The savings that can be obtained by processing information when it first becomes available are incalculable.

The VIATRON Rental Agreement

VIATRON does not require long-term lease agreements. All rental agreements contain a 30-day cancellation clause. In addition, VIATRON gives you, at no charge, two standby units for every 50 you rent. This replacement rather than repair service policy eliminates the delays experienced in waiting for a serviceman to arrive and finish his job.

For more information about the VIATRON Rental Agreement and System 21, write VIATRON Computer Systems Corporation, Dept. C-5, 105 Terrace Hall Avenue, Burlington, Massachusetts 01803.

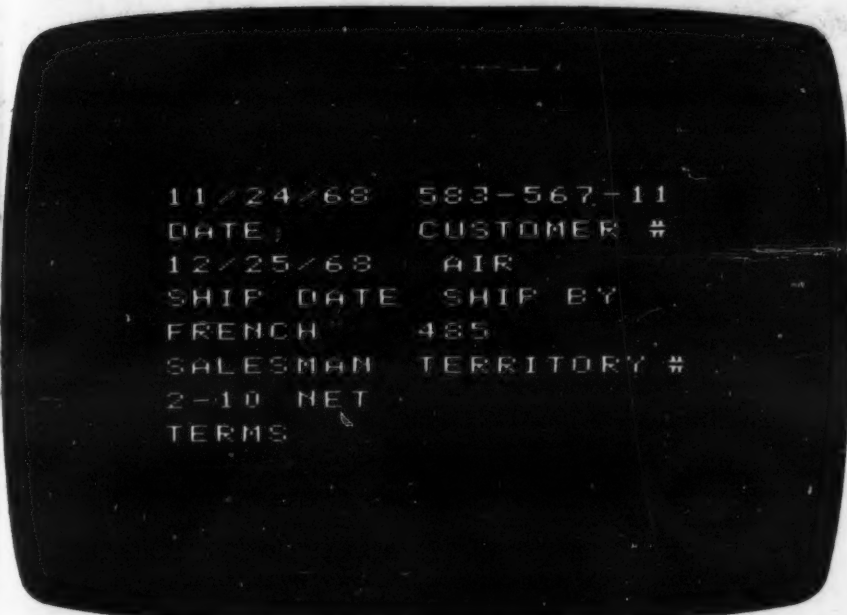




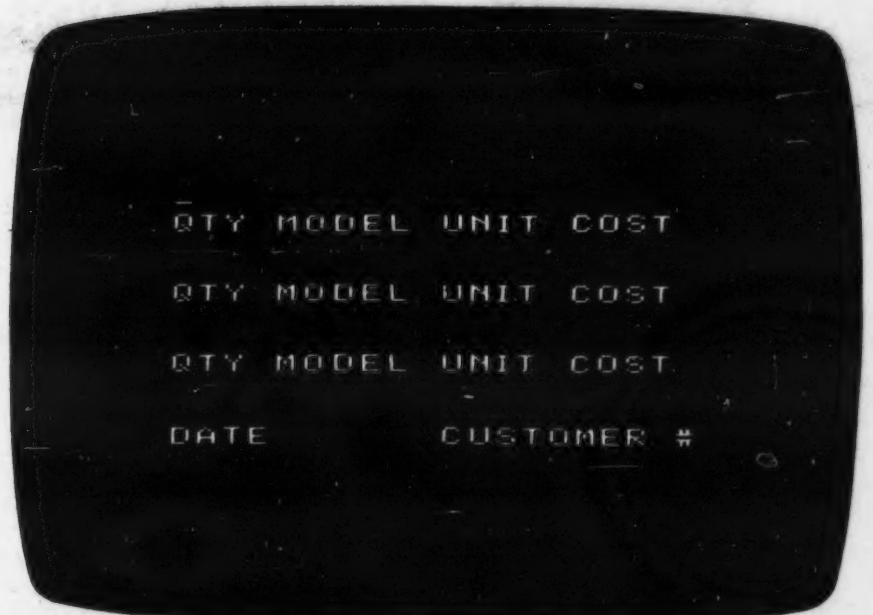
This is System 21 "fill-in-the-blanks" formatting.



Just key in the information required.



If it won't fit on a single record...



just call up the next format.



Entries of any length can be made...



without special training.

VIATRON System 21 puts the logic where the problem is

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 biggest selection of
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*Will a leasing company put your needs ahead of its own inventory requirements?

Don't Misrepresent Services, EDP Schools Advised by FTC

By a CW Staff Writer
 WASHINGTON, D.C. — The Federal Trade Commission is cracking down on EDP correspondence schools, and has, in effect, warned that it will not tolerate misrepresentations by these schools in their advertising and through their salesmen.

The scope of this watchdog action was brought out in detail in charges brought against two schools by the FTC last June. The schools, Punch Card Machine Training Service, Inc. of Kansas City, Mo., and Punch Card Training of Memphis, Inc., of Memphis, Tenn., and their officers subsequently signed an FTC consent order. In effect, this meant that while they didn't

admit any past guilt, they would avoid the specified violations in the future.

The order specifically forbids the following actions:

1. "Representing... that inquiries are solicited for the purpose of offering employment to qualified applicants."

2. "Representing... that respondents' placement service will guarantee or assure the placement of graduates in jobs for which they have been trained, or will find them jobs in the geographical areas of their choice; or misrepresenting, in any manner, their ability or their facilities for assisting graduates of their courses in finding employment, or the assistance ac-

tually afforded by respondents to graduates in obtaining employment."

3. "Representing... that a great demand by employers exists for graduates of respondents' schools or that such demand is greater than respondents' ability to supply graduates to fill such jobs; or misrepresenting, in any manner, the employment opportunities for graduates of respondents' schools or courses."

4. "Representing... that respondents accept only qualified persons for their courses of instruction and training or are selective as to which applicants they accept."

5. "Representing... that respondents only accept as students those persons who apply for enrollment in respondents' courses at the time the offer is made; or that enrollment therein cannot be accepted thereafter; or that only a limited number of students can be accepted for respondents' courses of instruction and training; or that a specified number of applicants responding to a particular advertisement... or from a particular area can be accepted for enrollment...; or that there are any limitations on the number of students who can be enrolled."

6. "Representing... that the lack of a high school education is not a handicap or impediment for a person to take and complete respondents' courses... or to obtain employment; or misrepresenting... the educational or other requirements for such training and employment."

7. "Representing... that persons completing respondents' courses will earn starting or average salaries in excess of salaries actually and customarily paid to persons of like age, experience, and training."

8. "Representing... that respondents' school occupies all of the building in which it is located; or is larger than it in fact is, or that such school provides or has available physical facilities which are not, in fact, available."

9. "Representing... that respondents will refund sums paid by or on behalf of a student."

The firms were ordered to give a copy of the order to each of their salesmen.

Mag tape too expensive? Punched tape too slow?

Your small computer deserves PEC data power!

High Speed—Low Price

Seems a shame to shackle that fast new computer of yours with slow, maintenance-prone punched tape. Yet digital magnetic tape recorders are so expensive.

Not now, they aren't.

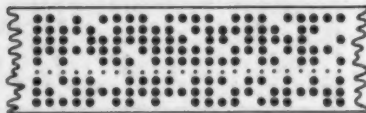
PEC can give your small computer real write/read data power. 10 KHz data transfer rates for under \$3,000. 20 KHz transfer rates from \$5,000. (Less than \$4,000 in quantities).

Discriminating computer users are demanding higher input/output performance on even the smallest machines.

That's why more and more major computer manufacturers are offering PEC digital magnetic tape recorders as standard equipment.

Insist on low cost-high performance PEC data power for your computer.

Compare With Punched Tape



You can store ten characters on an inch of punched tape. You can store up to 800 characters on an inch of magnetic tape. That's 80 times more data per inch!

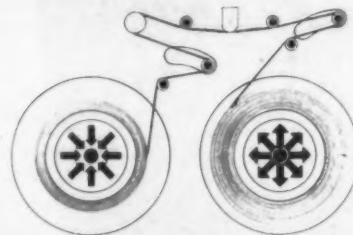
What about data transfer rates? A paper tape perforator plods along at 150 characters a second. Pretty slow for today's fast computers.

PEC digital magnetic tape recorders zip data in and out at speeds to 25 ips. Data transfer rates up to 20 KHz. That's 133 times faster than punched tape.

PEC data power costs just a little more than punched tape. Yet look at the tremendous increase in storage capacity and data transfer rates you get.

Compare With Other Mag Tape Models

PEC digital magnetic tape recorders use an elegantly simple single capstan velocity servo system. Pinch roller, a major source of skew and tape wear, is eliminated.



PEC recorders cost half as much as competitive makes, yet perform even better.

IBM compatible? You bet. Including the precise requirements for System/360, 9 channel, 800 bpi operation.

Choose the speed you want from 4 to 25 ips, at 800, 556, or 200 bpi. 7 track dual density available too. And up to 4 PEC recorders can operate from a single computer.

Select the data capacity, transfer rate, rack height and price from 3 distinct models.

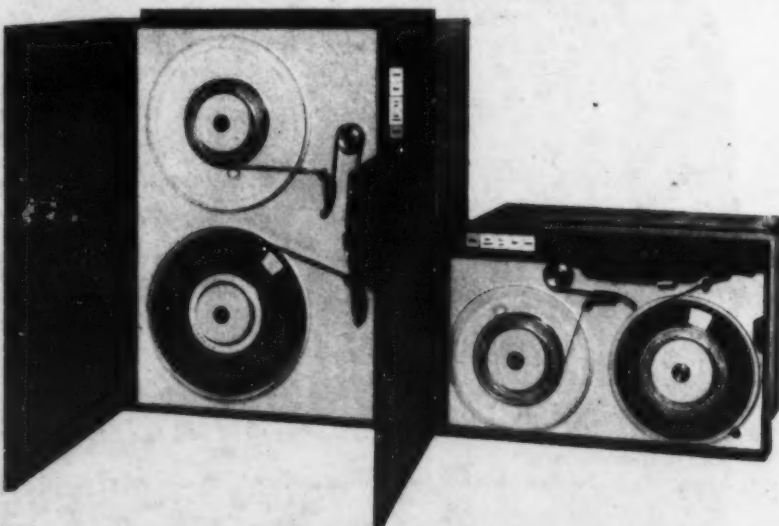
Three Reel Sizes

Reel Size	Max. Transfer Rates	Tape capacity
7 inch	10 KHz	600 feet
8½ inch	20 KHz	1200 feet
10½ inch	20 KHz	2400 feet

PEC also makes synchronous write-only and read-only recorders. A complete line of incremental models too. Perfect for data acquisition systems, off-line plotters, line printers, and data terminals. Perfect for just about any input or output requirement, for that matter.

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**CAN TIME-SHARING
 USERS USE SPARTAN
 A.C.T.?** See p. 26

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ty-core announces the ultimate in Data Tape Stations



COMPETITIVE ANALYSIS OF KEYBOARD-TO-TAPE STATIONS*

Features	Ty-core	Brand A	Brand B	Brand C
Character Display Large 3/4" Letters & Numerics	Yes	No	No	No
Easy-to-read 3/4" Position Display	Yes	No	No	No
All Tape Handling Eliminated	Yes	No	No	No
Keyboard Mechanical & Electrical Interlock	Yes	No	No	No
Desk Top Convenience	Yes	No	No	No
Direct Computer Interface	Yes	No	No	No
Typewriter "Feel" on Keyboard	Yes	No	No	No
Price	\$4995	\$8000 (Plus)	\$8500 (Plus)	\$9500 (Plus)

* Based on systems with automatic verification.

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Obsoletes noisy inefficient card punch machines.
Obsoletes existing keyboard-to-tape machines.
Reduces leasing or purchase costs 60% and more.

The Data Tape Station consists of a Keyboard, Control and Display Panel, Memory Unit and a Ty-tape cartridge all contained in a handsome, decorator-designed unit. Data Tape characters are keyed directly from the Keyboard to the Ty-tape cartridge. The output of the Data Tape Station may go to a Ty-core Data Accumulator, or as an option, directly to a computer.

DATA ACCUMULATOR — The Data Accumulator accepts data from one to twenty Ty-tape cartridges. The EDP supervisor can make one large reel from the inputs of up to twenty data tape station operators at his own discretion.

KEYBOARD — True typewriter "feel", true mechanical interlock and unsurpassed reliability are built into the keyboard through the use of optical techniques rather than mechanical switching used in competitive keyboards. Since the "touch" of the keyboard is similar to the touch on conventional electric typewriters, the operator can maintain speed and reduce errors in transmission of data.

True mechanical interlock prevents depressing two keys simultaneously. Auto skip/auto dup functions are performed instantaneously at electronic speeds. All of these advantages allow an operator to increase her productivity by a minimum of 40% over her keypunch productivity.

DISPLAY — Error Display "talks" to the operator in easy-to-understand English. There are no cross matrices, no BCD lights to be interpreted and no bouncing rows of numbers with decoding charts. The COLUMN IDENTIFICATION is presented to the operator in direct English. If your operator is in column 117, the number 117 is presented to her in 3/4" numbers. If the character (K) is in question the display presents the letter (K) in a bold 3/4" to your operator.

TY-TAPE — A Ty-tape cartridge is used instead of a tape-to-tape reel to eliminate threading and all handling operations and prevent tape damage and loss of data. This cartridge is virtually indestructible and may be used over and over again.

Write on your Company Letterhead
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- ☐ Have your applications engineer call.
☐ Send me Brochure on
Series 7500 Data Tape Systems.
☐ I have _____ key punch units.
☐ I wish to replace _____ key punch units.

Name _____

Title _____

Company _____

Street _____

City _____

State _____

Zip _____



COMPUTERWORLD

financial

8 CW Companies Among Top Defense Contractors

Eight *Computerworld* listed companies were among the top 50 defense contractors during the federal 1968 fiscal year that ended June 30, according to figures released by the Department of Defense.

Of the total \$38.83 billion in defense awards, down from \$39.22 billion in fiscal 1967, \$22.15 billion (57%) went to the top 50 companies and \$3.58 billion (9.2%) went to the top eight *Computerworld* listed companies.

The top five companies on the list, the only ones with contracts totaling more than \$1 billion, accounted for \$8.02 billion (20.7%) of the total.

Four of the *Computerworld* listed companies improved their standings from the previous year, two maintained theirs, and two dropped.

Because of the lag in gathering statistics, the list does not reflect current standings. In addition, the list reflects only prime contracts and excludes the large dollar volume of subcontracting.

Fiscal 1968 rank	Company	Contract volume (millions)	Fiscal 1967 rank
3	General Electric Co.	\$1489	4
15	Raytheon Co.	452	19
16	Sperry Rand Corp.	447	13
20	Honeywell, Inc.	352	20
26	Radio Corp. of America	255	27
30	International Business Machines Corp.	224	34
47	Collins Radio Co.	135	32
50	Sanders Associates, Inc.	131	50

Merrill Lynch, 7 Employees Penalized for 'Misconduct'

By a CW Staff Writer

NEW YORK — Merrill Lynch, Pierce, Fenner & Smith, Inc., the nation's largest securities brokerage house, has been ordered to close temporarily two of its specialized offices in New York and San Francisco as part of a settlement of Securities and Exchange Commission staff charges of misconduct.

The settlement agreement with the SEC also contained censure of 10 Merrill Lynch employees and a temporary "disassociation" of seven of them. Charges against four others were dropped.

In addition, public hearings will begin here Dec. 16 against 14 institutional investors involved.

The SEC has charged that Merrill Lynch disclosed nonpublic information it had obtained about declining Douglas Aircraft Corp. earnings to selected institutional investors. This information allowed them to sell out before the information became public a few days later. At the same time, Merrill Lynch was purchasing Douglas Aircraft stock for other investors.

Wrongdoing Denied

Merrill Lynch, accepting the SEC sanctions, said it did so only to

avoid a prolonged and costly dispute with the SEC. The SEC order specified that the firm and the employees disassociated from it waved a hearing and consented to findings that they violated the law "solely for the

purpose of these hearings and without admitting the allegations."

The 14 institutional investors whose hearings begin Dec. 16 have also denied any wrongdoing.



'Punched' Stock

Pat Thatcher of Vance, Sanders & Co., Boston, holds a securities industry "first" — a punch card certificate for Vance, Sanders Special Fund, a new capital appreciation mutual fund. The punch card form replaces the traditional 8" by 12" paper certificate. Because they are easier to process and store, punch card forms have been suggested as a way to ease the stock brokerage house logjam that has beleaguered the securities industry and led to four day trading weeks since last June.

Financial Newspaper Rebuffs SEC Attempt to Subpoena Its Records

Special to Computerworld

NEW YORK — A Securities and Exchange Commission attempt to subpoena the records of *The Wall Street Transcript*, a weekly financial publication, was rebuffed recently by Federal Judge Harold R. Tyler, Jr.

The SEC attempted to subpoena *The Transcript's* records to determine if the newspaper had violated provisions of the Investment Advisors Act.

While the SEC made no charges against *The Transcript*, it did suggest that its selection of material and its advertisements in other publications indicated

that *The Transcript* was representing itself as an investment advisor.

The Transcript fought the subpoena, maintaining that it was a financial publication of general and regular circulation, and therefore protected under the freedom of the press provisions of the First Amendment.

The Transcript, which claims a circulation of 8000, reprints verbatim, without comment, signed brokerage house reports on companies and industries. It also prints news releases, lists of merger actions, tender offers, and corporate promotions.

New Registrations

GENERAL ANALYTICS Corp., 236 E. 46th St., New York, a computer software company, filed to register 250,000 common shares. Proceeds, with the price to be set, intended for working capital. The underwriter is Collins Security Co., Western Federal Savings Bank, Denver.

CALDWELL COMPUTER Co., 4300 N. Central Expressway, Dallas, a computer leasing company, filed to register 200,000 common shares. Proceeds, at a maximum of \$5 per share, intended for equipment, debt repayment, and working capital. The underwriter is Sanders & Co., Inc., Rep. National Bank Bldg., Dallas.

INFORMATION & COMPUTING CENTERS Corp., 777 S. Central Expressway, Richardson, Texas, a computer service company, filed to register 300,000 common shares. Proceeds, at a maximum of \$5 per share, intended for equipment and working capital. The underwriter is Sanders & Co., Inc., Rep. National Bank Bldg., Dallas, Texas.

INTERNATIONAL COMPUTER Corp., 90 Park Ave., New York, a computer service and leasing company, filed to register 150,000 common shares. Proceeds, at a maximum of \$15 per share, intended for equipment and working capital. The underwriter to be named.

INTERNATIONAL SYSTEMS ASSOCIATES, Ltd., 350 Fifth Ave., New York, a computer service company, filed to register 300,000 common shares. Proceeds, at a maximum of \$6, intended for expansion and working capital. The underwriter is D.H. Blair Securities Corp., 5 Hanover Sq., New York.

MANAGEMENT INFO SYSTEMS Inc., 759 Slate Rd., Princeton, N.J., a computer service company, filed to register 140,000 common shares. Proceeds, at a maximum of \$6.25, intended for debt repayment, equipment, and expansion. The underwriter is Goldwater, Valente, Fitzpatrick & Schall, New York.

This announcement is neither an offer to sell nor a solicitation of an offer to buy any of these securities. The offer is made only by the Prospectus.

input, inc.

100,000 Units

(Each unit to consist of one share of Common Stock and one Warrant)

Price \$6.00 Per Unit

Copies of the Prospectus may be obtained from the undersigned only in States in which the Prospectus may be legally distributed.

Alessandrini & Co., Inc.

Earnings Reports

TRACOR, INC.
Nine Months Ended Sept. 30
1968 1967
Revenue \$56,806,000 \$41,741,000
Earnings 1,608,000 1,819,000
Shr Ernd .85 1.05

CALCOMP, INC.
Three Months Ended Sept. 29
1968 a1967
Revenue \$4,100,225 \$3,056,894
Earnings 271,199 220,217
Shr Ernd .12 .10

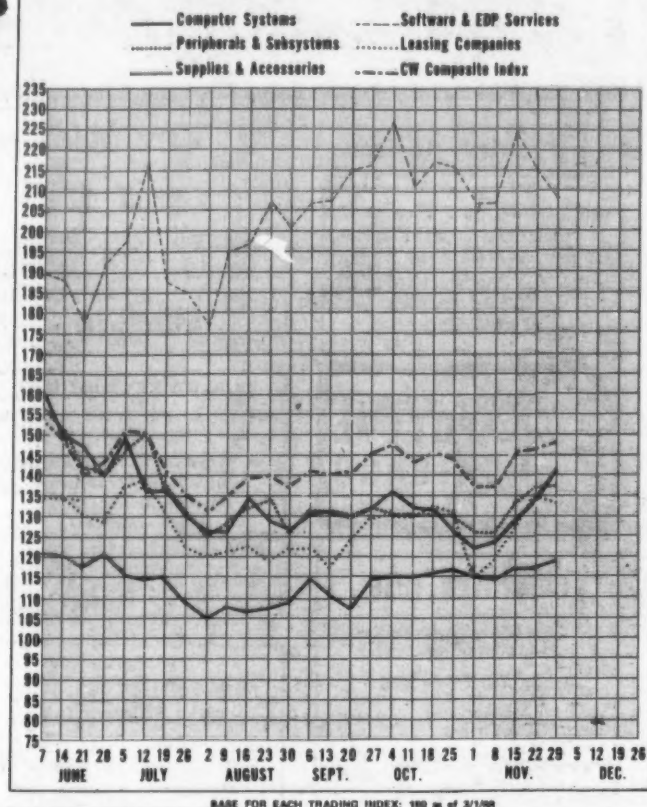
a—Adjusted for 2-for-1 stock split. Quarter ended Oct. 1.

SYSTEMS ENGINEERING LABS
12 Weeks Ended Sept. 20
1968 1967
Revenue \$3,041,762 \$2,530,928
Earnings 218,683 178,000
Shr Ernd 0.11 0.09

ELECTRONIC MEMORIES INC.
Nine Months Ended Sept. 30
1968 1967
Revenue \$21,017,478 \$18,411,678
aEarnings 1,044,145 836,423
Shr Ernd 0.86 0.72

a—Restated to reflect acquisition on a pooling of interests basis.

Computer Stocks Trading Index



EDP Stocks Up As Dow Sets '68 High

By the CW Financial Staff

The stock market moved to new high ground the week ended Nov. 29. The Dow Jones industrial average reached a year's peak of 971.35 Monday and then pushed even higher to close at 985.08 on Friday, only 10.07 points below its record of 995.15 set on Feb. 6, 1966.

The *Computerworld* composite stock average moved up 2 points (1.37%) to 148 compared with the 18 point (1.86%) increase in the Dow Jones. All of the other major indexes showed greater increases than that shown by the *Computerworld* average. Standard & Poor's industrial average rose 2.36 (2.04%) to 118.03; the New York Stock Exchange composite average, 1.18 (1.96%) to 61.27; the American Stock exchange price index, 74 cents (2.33%) to \$32.54; and the N.Q.B. over-the-counter industrial average, 11.86 (2.89%) to 421.64.

The gap between the number of gainers and losers among *Computerworld* listed stocks widened, on the upward side. Sixty-two stocks rose, 46 fell, and four were unchanged. The previous week 53 were up, 46 were down, and four unchanged.

7 Make Big Gains

Gains of 10% or more were made by only seven stocks, compared with 14 and 22 in the previous two weeks. Losses of the same magnitude were suffered by three stocks, compared with four the previous week.

The Computer Systems sector, with its index up 7 points (5.22%) to 141, featured only one large gainer, Systems Engineering Labs. SEL rose 3-1/4 (10.32%). Hewlett-Packard, down 1/2 (0.56%), was the only stock in the sector to lose ground.

In the Peripherals & Subsystems sector (up 1 point or 0.73%) Alphanumeric rose 6-1/2 (10.40%) to 62-1/2, or 197% above its March 1 base price. Digitronics fell 2-1/4 (10.23%).

Adams-Millis, up 1-7/8 (8.72%), was the biggest gainer in the Supplies & Accessories sector (up 2 points or 1.71%). Uarco's 1-1/4 (3.68%) loss was the largest in the sector.

SSI Jumps 37%

Strategic Systems Inc., a management company, jumped 10 points (37.04%) to 37. A. Dale Mayo, SSI executive vice president, told *Computerworld* that two "large, well known institutional investors" had acquired 100,000 SSI shares from Bates Manufacturing, which had received the shares in return for its wholly owned subsidiary, Con-Data. Some 60,000 more of Bates' original 175,000 share holding (which represented about 18% of all SSI common) will probably also be acquired, according to Mayo. He concluded that "investors had decided to look at something other than \$180 University Computing."

A half-page *Wall Street Journal* advertisement appearing during the week probably helped bring the company to the attention of investors.

Other large gainers in the Software & EDP Services sector (down 7 points or 3.26%) were Automation Sciences, up 1-3/4 (12.07%), and Computer Environments, up 1-1/4 (11.11%). United Data Centers lost 2 points (16%) after rising 25% the previous week. Computer Sciences, listed for the first time on the New York Stock Exchange, rose 1 (1.68%) to 60-1/2.

Boothe Computer recouped a previous loss and rose 4-1/2 (10.23%).

COMPUTER STOCKS: TRADING SUMMARY

Week Ending November 29

EXCHANGE	BASE PRICE 3-1-68	1968 RANGE	CLOSING PRICE	COMPUTER SYSTEMS	WEEK NET CHANGE	WEEK % CHANGE	% CHANGE FROM BASE
NYSE	163 3/8	253-157	253 1/4	Burroughs	+ 6 3/4	+ 2.74	+ 55.01
NYSE	67 3/4	110-54	70 3/8	Collins Radio	+ 5 1/2	+ 8.48	+ 3.87
NYSE	101 1/2	174-94	157 7/8	Control Data	+ 3 5/8	+ 2.35	+ 55.54
AMSE	102	164-95	164	Digital Equipment	+ 14 1/4	+ 9.51	+ 60.78
NYSE	87 1/4	100-81	99 5/8	General Electric	+ 1 3/4	+ 1.79	+ 14.18
NYSE	60	91-59	89 1/2	Hewlett-Packard	- 1/2	- 0.56	+ 49.17
NYSE	93 1/8	144-89	127 3/4	Honeywell	+ 1 3/4	+ 1.39	+ 37.18
NYSE	288 1/2	375-280	333 3/4	IBM	+ 6	+ 1.83	+ 15.68
NYSE	103 7/8	153-40	129	National Cash Register	+ 8 1/4	+ 6.83	+ 24.19
NYSE	46 7/8	55-44	48 7/8	RCA	+ 1 3/4	+ 3.71	+ 4.27
NYSE	39 1/8	53-44	49 5/8	Raytheon	+ 1 7/8	+ 3.93	+ 26.84
OTC	22 1/2	66-20	38	Scientific Controls Corp.	+ 3	+ 8.57	+ 68.89
NYSE	78 3/4	114-72	101 3/4	Scientific Data	+ 6 1/2	+ 6.82	+ 29.20
NYSE	45	63-42	50 1/4	Sperry Rand	+ 2	+ 4.14	+ 11.67
AMSE	22 1/2	39-20	34 3/4	Systems Engineering Labs	+ 3 1/4	+ 10.32	+ 54.44
EXCHANGE	BASE PRICE 3-1-68	1968 RANGE	CLOSING PRICE	PERIPHERALS & SUBSYSTEMS	WEEK NET CHANGE	WEEK % CHANGE	% CHANGE FROM BASE
NYSE	58 3/8	91-52	82	Addressograph-Multigraph	- 3/8	- 0.46	+ 40.47
OTC	21	85-45	69	Alphanumeric	+ 6 1/2	+ 10.40	+ 228.57
NYSE	29	38-26	38 1/2	Ampex	+ 3/4	+ 1.99	+ 32.76
OTC	17 1/4	27-14	15 3/4	Bolt, Beranek & Newman, Inc.	+ 3/4	+ 5.00	- 8.70
NYSE	13 1/2	20-12	17 1/4	Bunker-Ramo	+ 7/8	+ 5.36	+ 27.78
AMSE	32 1/8	50-27	38	Calcomp	- 3/8	- 0.98	+ 18.29
OTC	24 1/2	49-20	39 1/2	Cognitronics	+ 1/2	+ 1.28	+ 61.22
OTC	12	18-10	17 1/8	Computer Equipment	+ 1	+ 6.20	+ 42.71
AMSE	15 1/4	23-13	21 5/8	Data Products	+ 1 1/8	+ 5.49	+ 41.80
OTC	19 1/4	27-16	19 3/4	Digitronics	- 2 1/4	- 10.23	+ 2.60
OTC	39	57-32	57 1/2	Electronic Memories	+ 1/2	+ 1.88	+ 47.43
OTC	10	29-9	13 3/4	Fabri-Tek	- 3/8	- 2.66	+ 37.50
OTC	34	35-14	31 1/4	Gerber Scientific	+ 1 1/2	+ 5.04	- 8.09
OTC	12 1/2	26-10	22 3/4	Information Displays	- 1/4	- 1.09	+ 82.00
AMSE	16 7/8	52-14	24 1/2	Milgo Electronics	- 1/2	- 2.00	+ 45.18
OTC	74	145-71	129	Mohawk Data Sciences	- 2 3/4	- 3.49	+ 32.17
OTC	18	42-16	30 3/4	Optical Scanning Corp.	+ 7	+ 5.74	+ 74.32
AMSE	25 5/8	38-12	31 1/2	Photon	- 3/4	- 2.38	+ 70.83
OTC	40 1/4	99-38	84	Potter Instrument	+ 7/8	+ 2.86	+ 22.93
AMSE	16	29-14	23 1/8	Recognition Equipment Corp.	+ 6 1/2	+ 8.39	+ 108.69
NYSE	46 1/8	66-42	60 1/8	Rixon Electronics	+ 5/8	+ 2.78	+ 44.53
OTC	47	155-53	95	Sanders	- 3/4	- 1.23	+ 30.35
OTC	40 1/2	51-35	35	Scan-Data	+ 8	+ 9.19	+ 102.13
NYSE	242 1/4	321-229	290 1/2	Tally Corp.	- 3	- 7.90	- 13.58
				Xerox	+ 18 3/4	+ 6.90	+ 19.92
EXCHANGE	BASE PRICE 3-1-68	1968 RANGE	CLOSING PRICE	SUPPLIES & ACCESSORIES	WEEK NET CHANGE	WEEK % CHANGE	% CHANGE FROM BASE
OTC	48 1/2	64-37	44	Acme Visible	- 1	- 2.23	- 9.28
NYSE	20 1/2	32-18	23 3/8	Adams-Millis	+ 1 7/8	+ 8.72	+ 14.02
OTC	13 5/8	22-13	22 1/2	Baltimore Business Forms	+ 1 3/4	+ 8.43	+ 65.14
AMSE	27	44-21	29 5/8	Barry Wright	-	-	+ 9.72
OTC	31 1/4	40-26	36 1/4	Data Documents	-	-	+ 15.99
OTC	27 1/4	40-26	40 1/2	Ennis Business Forms	+ 3/4	+ 1.90	+ 47.71
NYSE	84 1/8	119-81	113 3/4	3M Company	+ 3 1/2	+ 3.17	+ 35.21
NYSE	59	93-48	86	Memorex	- 1/2	- 0.58	+ 48.27
OTC	27 1/4	32-25	31	Moore Business Forms	+ 2 1/8	+ 7.36	+ 13.76
NYSE	28 5/8	43-24	42 3/4	Nashua Corp.	+ 1/4	+ 0.59	+ 49.34
OTC	31 1/4	56-40	47 1/2	Reynolds & Reynolds	+ 1/2	+ 1.06	+ 52.00
OTC	34 1/2	35-24	25 3/4	Standard Register	-	-	- 24.82
NYSE	37 3/4	44-30	32 3/4	Uarco	- 1 1/4	- 3.68	- 13.25
AMSE	14 1/4	23-13	23 7/8	Wabash Magnetics	+ 1 1/4	+ 5.52	+ 67.54
OTC	25 3/4	37-24	31 1/4	Wallace Business Forms	- 1/2	- 1.58	+ 21.36
EXCHANGE	BASE PRICE 3-1-68	1968 RANGE	CLOSING PRICE	SOFTWARE & EDP SERVICES	WEEK NET CHANGE	WEEK % CHANGE	% CHANGE FROM BASE
OTC	7 1/2	25-7	15	Advanced Computer Techniques	+ 1	+ 7.14	+ 100.00
OTC	17	36-14	35	Applied Data Research	-	-	+ 105.88
OTC	15 1/2	23-13	15 1/2	Artes	- 1 1/4	- 7.46	-
AMSE	47	70-42	70 1/4	Automatic Data Processing	+ 3/8	+ 0.54	+ 49.47
OTC	4	19-4	16 1/4	Automation Sciences	+ 1 3/4	+ 12.07	+ 306.25
OTC	4 1/2	23-3	13 3/4	Brandon Applied Systems	- 3/4	- 5.17	+ 205.55
AMSE	22 7/8	43-19	20 5/8	Computer Applications	- 3/8	- 1.79	- 9.84
OTC	5	15-7	12 1/2	Computer Environments	+ 1 1/4	+ 11.11	+ 150.00
OTC	30	64-24	59	Computer Network	+ 1	+ 1.72	+ 96.67
NYSE	40	64-36	60 1/2	Computer Sciences	+ 1	+ 1.68	+ 51.25
OTC	39	62-28	33 1/2	Computer Usage	- 2	- 5.61	- 14.11
AMSE	36 1/2	81-36	80 1/4	Computing & Software	+ 1/4	+ 0.31	+ 119.86
OTC	12 1/2	23-5	21 1/2	Datamation Services	- 1/2	- 2.27	+ 72.00
OTC	14 1/2	22-10	20 1/2	Datatab	+ 1/2	+ 2.50	+ 41.38
OTC	12 1/2	20-9	11 1/2	Digitek	- 1/4	- 2.13	- 8.00
AMSE	38 3/8	52-26	33 7/8	Electronic Computer Prog. Inst.	+ 2 7/8	+ 9.27	- 11.73
OTC	35	68-32	66 1/2	Informatics	+ 1/2	+ 0.76	+ 90.00
OTC	21	28-4	20 1/2	Matrix Corp.	+ 1/2	+ 2.50	- 2.38
OTC	5	28-4	23	National Computer Analysts	- 1	- 4.17	+ 360.00
AMSE	31	61-28	61 1/4	Planning Research	+ 2 1/8	+ 3.59	+ 97.58
OTC	113 1/4	115-12	112 1/4	Programming & Systems	-	-	- 7.55
OTC	9	15-8	11	Software Systems	+ 1/2	+ 4.76	+ 22.22
OTC	29 1/2	37-8	37	Strategic Systems	+ 10	+ 37.04	+ 25.42
OTC	20 1/2	22-11	12	TBS Computing Centers, Inc.	- 1/4	- 2.04	- 41.46
OTC	112	112-10	10 1/2	United Data Centers	- 2	- 16.00	- 12.50
OTC	63	182-57	173	University Computing	- 11	- 5.98	+ 174.60
OTC	20	36-20	30 1/2	URS Systems Corp.	- 3/4	- 2.40	+ 52.50
OTC	230	230-22	24	U.S. Time-Sharing	+ 1 1/2	+ 6.67	- 20.00
EXCHANGE	BASE PRICE 3-1-68	1968 RANGE	CLOSING PRICE	LEASING COMPANIES	WEEK NET CHANGE	WEEK % CHANGE	% CHANGE FROM BASE
OTC	18	55-18	48 1/2	Boothe Computer	+ 4 1/2	+ 10.23	+ 169.44
OTC	4 1/4	24-4	16	Computer Exchange	- 1 1/2	- 8.57	+ 276.65
AMSE	25 1/8	36-21	26	Computer Leasing	+ 2 3/4	+ 11.83	+ 3.48
OTC	12 1/4	19-11	13 1/8	Cyber-Tronics	- 5/8	- 4.55	+ 7.14
AMSE	53 1/4	92-44	65	Data Proc. Financial & General	- 3	- 4.41	+ 22.07
OTC	12 1/2	17-8	14	Datron Rental	- 2	- 12.50	+ 12.00
OTC	20	59-18	49	Dearborn Computer	- 3/4	- 1.51	+ 145.00
OTC	13 1/4	19-12	14 1/2	DPA, Inc.	+ 3/4	+ 5.45	+ 9.43
AMSE	28 3/4	43-25	29	Greyhound Computer	- 3/4	- 2.52	+ 0.87
AMSE	28 1/8	69-36	43 3/4	Granite Equipment Leasing	+ 1 1/8	+ 2.64	+ 55.55
AMSE	49	139-41	139 3/4	Leasco	+ 3 3/4	+ 2.76	+ 185.20
OTC	5	14-5	8 3/4	Lectro Computer Leasing	+ 1/2	+ 6.06	+ 75.00
AMSE	30 3/4	66-27	56 7/8	Levin-Townsend Computer Corp.	+ 7/8	+ 1.56	+ 84.96
OTC	10 1/2	16-8	7 3/4	LMC Data, Inc.	- 1/4	- 3.12	- 26.19
OTC	10 7/8	16-10	14 1/2	Management Assistance	- 1/4	- 1.70	+ 33.33
AMSE	41 5/8	53-25	37 1/8	National Equip. Rental	+ 1 5/8	+ 4.58	- 10.81
OTC	113 1/4	14-8	11	NCC Leasing	+ 1/2	+ 4.76	- 16.98
AMSE	38	64-35	43 3/8	Randolph Computer Corp.	- 5/8	- 1.42	+ 14.14
OTC	10 1/2	53-10	51	System Capital Corp.	+ 4 1/2	+ 9.68	+ 385.71
AMSE	10 7/8	25-10	25 5/8	U.S. Leasing	-	-	+ 135.63

— Since 10/18/68 *Companies included in *Computerworld's* stock trading index for each sector.

MEETING NOTICES

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For reservations and further information, call Mr. Robert Vannerson at 542-4850, or write to him c/o Liberty Mutual Insurance Co., 175 Berkeley Street, Boston, Massachusetts 02117.

calendar

Dec. 12-14, San Francisco — Fall Digital Equipment Computer Users Society. Contact: Mrs. Angela J. Cossette, Digital Equipment Corp., Maynard, Mass. 01754.

Dec. 12-13, Palo Alto, Calif. — Computer Users Group. Contact: William P. Berry, Philco-Ford Communications and Electronics Div., 3900 Welsh Rd., Willow Grove, Pa.

Jan. 13-14, LaJolla, Calif. — Technical Symposium on Applications of Sea Going Computers. Contact: Charles B. Jackson, MTS Data Engineering Committee, P.O. Box 1820, La Jolla, Calif. 92037.

Jan. 15-17, Tampa, Fla. — Second Annual Simulation Symposium. Contact: Annual Simulation Symposium, P.O. Box 1155, Tampa, Fla. 33601.

Jan. 22-24, Honolulu, Hawaii — Second Hawaii International Conference on Systems Sciences. Contact: Dr. Franklin F. Kuo (HICSS-2), Dept. of Electrical Engineering, 2565 The Mall, Univ. of Hawaii, Honolulu, Hawaii 96822.

Jones to Head Software Group, Plans Membership Drive at FJCC

Special to Computerworld
WASHINGTON, D.C. — Dick Jones of Applied Data Research has been elected president of the

Association of Independent Software Companies.

He said the association, which has 11 members, would immediately undertake a membership drive and that he planned to confer with prospective members during the Fall Joint Computer Conference.

Walter Bauer of Informatics has been re-elected vice president and treasurer, and Robert Wallace of Auerbach has been elected vice president and secretary.

The association, formally organized last spring [CW, May 22], was created to handle common problems such as competition from "not for profit" organizations and legal protection for software.

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Information Center Set Up To Provide Scientific Data

CHICAGO — ITT Research Institute has begun developing an information center to provide industry and academic institutions with greater access to scientific information, starting with Chemical Abstracts Service data.

Initially funded by the National Science Foundation, the center will develop a system for disseminating chemical information to students, university faculties, research personnel, and industrial chemists. The information will be drawn from computer tapes prepared by Chemical Abstracts Service (CAS). The institute's technical information research staff is writing general purpose file, search, and output computer programs for use with CAS tapes. These programs also will be applicable to other tape resources, such as Biological Abstracts, Engineering Index and Nasa Star.

Access to scientific information will be provided through program services and through search services.

During initial development, CAS references will be offered in a pilot phase on a free basis. After center operations and user reactions have been evaluated, services will be expanded, and a fee schedule will be established to

make the center self-supporting.

In connection with the center, an effort will be made to educate future chemists in computer processing of information. A graduate course titled "Modern Techniques in Chemical Literature" will be taught at Illinois Institute of Technology this year.

The formation of independent information centers is growing as a result of an increasing number of tape services available. Since there are approximately 50 tape services now being marketed, the expense of subscribing to more than a few of them becomes prohibitive for many companies and universities. Lack of compatibility in computer program codes and formats is an additional prob-

lem, said Martha E. Williams, manager of technical information research. The center programs here will use PL/I.

In addition to the center under development here, the National Science Foundation is funding the establishment of an information center at the University of Pittsburgh. Other facilities for searching CAS tapes are located at the University of Georgia, the University of Nottingham (U.K.), the Karolinska Institute (Sweden), the Denmark Tekniske Bibliotek (Denmark), and the National Research Council of Canada. Liaison will be established between these centers and the center here to permit mutual cooperation.

DATA PROCESSING 1969

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- Why have so many of us missed the boat on professional training?
- How do you budget a data processing operation?

Jan. 7th

Waldorf Astoria Hotel, New York City



DATA PROCESSING 1969 is a one-day conference structured to provide insight into answering these questions and others that plague data processing professionals. It is an opportunity for you to pick up pointers from experts on solving the exact data processing problems confronting your company, and, perhaps, yourself.

The speakers were selected because they are frank and preceptive. They draw from hard, personal experience to give you invaluable advice, the kind that can help improve your organization and your position. The topics were selected after careful analysis of your comments and our consulting experience. They include:

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Robert W. Lear, President Indian Head, Inc.
Joseph W. Lowell, Director
ADP Management Training Center
U.S. Civil Service Commission

COST EFFECTIVENESS

Dr. Emanuel S. Savas,
Deputy Administrator The City of New York

MANAGING EDP RESOURCES

George F. Weinwurm,
Technical Advisor to Management
Corporate Planning Staff
System Development Corporation

PEOPLE-TO-PEOPLE COMMUNICATIONS

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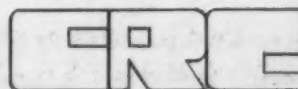
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System Optimizes Routes For Deliveries by Trucks

CHICAGO — A new truck routing system implemented here should have broad application in areas where routing is a problem, according to A.T. Kearney & Co., developer of the system.

Called Card (Computer Assisted Route Development), the system was developed for the Linen Supply Association of America to systematize routing of delivery trucks for suppliers. The system is currently operational in the Chicago area. According to Kearney Vice President Don Weston, there has been no previous effort to systematize this problem because of its size.

The package consists of three programs. The Road program defines an abstract "map" of a specific city for the routing network. The Plot program locates the distribution points on this map. The Route program develops and schedules the routes

from customer data. The system is running on a CDC 3600 with plans to switch to a 6600. At present, the routing program can handle up to 16,000 customers with any delivery frequency from daily to monthly. The system accepts up to 10 different types of products and up to 20 different truck capacities. The Route program can generate up to 100 routes and schedule them throughout the month.

Weston said the Chicago area company now using the system realized a 30% savings on delivery costs and a first year return on investment in excess of 200%. Data produced from this system should be a significant aid in policy decisions for management, he said.

Kearney, at the request of the LSAA, plans to make the routing service available for other areas across the country.

Flowgen Now Available for 1130s

Special to Computerworld
ANAHEIM, Calif. — California Computer Products has expanded its Flowgen product line to include the IBM 1130 system. The program draws flowcharts of Fortran programs on graphic plotters as documentation aids. It also assists in debugging programs by providing a means for verifying

whether or not specifications have been met satisfactorily.

The program is formatted to product output which fits an 8-1/2" by 11" page, convenient for documentation storage.

The system requires a 16K 1130 with a CalComp plotter, and is priced on a one time lease basis at \$2000.

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AT 863-1954

Study of Two PL/1 Manuals Reveals Major Differences

There are some major differences between the special PL/1 Language Specifications manual turned over to the USASI X3.4 Committee [CW, Oct. 9] and the restricted PL/1 Language Specifications manual (Y33-6003-0) intended for limited distribution. Both are dated March, 1968. The special manual was submitted to X3.4 by IBM for consideration as standard, and is not listed in the IBM bibliographies. The restricted manual was intended to give "interested" people a run-down on current and future implementations of PL/1.

There are at least two areas in which the difference between the manuals could seriously affect the user.

Character Restrictions

The first problem is that the version for USASI requires that the full 64 character set be used for source input.

The disappearance of the 48 character set would present the user with a headache. Most manufacturers use a drum printer which has a general limitation of less than 64 characters and which usually operates with about 56 characters. The necessary additional characters for the full 64 character set would certainly slow the printer down considerably and would probably require redesign of the drum. Significantly, IBM uses the chain printer (for which it holds the basic patents), which permits the expansion of the character set without seriously degrading performance.

The S/360 already uses this larger character set. In most other machines, however, even if the space is available the user has already included special symbols, such as financial symbols, to the capacity of the drum.

Compile Time Facilities

The second problem is that the version for USASI drops the compile time capabilities, a change that would affect the user immediately upon acceptance of the standard. Should dialects of these facilities develop, the user would be locked to his manufacturer as tightly as if he were using a proprietary language (e.g., PL/I).

The compile time facilities, which enable the program to be modified at compilation by external sources, can be used to improve operating efficiency as well as program maintenance.

1130 Gains Real-Time With Process Control

FORT LEE, N.J. — A new system has been announced here which allows the IBM 1130 computer to be used in a real-time and time sharing mode. The system, called SYS-2113 Data Acquisition and Control Systems, was developed by SYS Associates.

The system can handle a wide variety of physical processes and, according to the company, can control up to 46 external unit devices while processing background jobs through an interrupt handling package.

News Analysis

Current systems under design or in implementation must take into account such language facilities while the system is in the blueprint stage, if they are to use a language effectively. A problem could arise if an analyst or programmer designed a system based on these features, and in the future such features were no longer available.

This seems to be a case of a lock-out, rather than a lock-in, standard.

Communication between programmer and analyst can be greatly improved by the use of these facilities in specifying data formats, data structures, and processing information relative to the data base organization. The analyst need not specify, in detail, because the user programmer can reference the data indirectly through the use of compile time macros. If the operating environment for a program should change, the program could be informed of this through parameters built into OS, and recompiled without the necessity for consulting the programmer. This would, in effect, allow a program to be self optimizing.

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Computer Helps Cleo Wrap Get Ready for Santa

MEMPHIS, Tenn. — Children aren't the only ones looking forward to gaily wrapped packages under the Christmas tree.

Cleo Wrap, one of the nation's largest producers of gift wrapping paper, uses a computer to predict the Christmas needs of an estimated 10 million American families.

"We have thousands of items to produce, ship, and stock in thousands of stores — and everything is timed for Dec. 25," said Charles L. Wurtzburger, Cleo Wrap president. "There is no between-season business to smooth our production flow."

"Our computer enables us to plan year-round operations to meet the Christmas season crush efficiently, maintain a high level of customer service, and adjust to a growth pattern which has doubled our size in three years."

Carl Bogan, system manager, said computer assisted demand projections, updated as orders arrive, trigger operations from raw materials ordering to final delivery at a customer location in time for Christmas.

"The trick is to have enough production to meet demand without being left with too much unused stock at the end of the buying season," Bogan said.

He said this is accomplished largely through accurate, computer assisted projection of market demands for the coming season's products.

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Judge Smith's Decision - Part 2

Patent Ruling Hinged on Definition of 'Process'

Whether computer programs are patentable has been hotly debated for some time, and the final answer still has not been given. The Patent Office believes that they are not, and bases its belief upon "the meaning of the word 'process' as employed in

the applicable statutes, and on the well established doctrine that processes which can be performed solely by mental acts do not constitute patentable subject matter."

The Court of Patent Appeals, in its judgment in *Prater & Wei*, takes issue with both of these points and holds that computer programs may constitute patentable matter. Last week Computerworld printed a condensation of that part of the decision by the late Judge A.M. Smith dealing with the "Rule of Abrams." Below is a condensation of that part of the decision dealing with the definition of the word "process" and of the court's summary.

We temporarily set aside our discussion of Abrams at this point to approach the questions of patentability of claims of this type in the light of the development of the Patent Law from its constitutional origin. Article I, Section 8 of the U.S. Constitution gives to Congress the power to promote the progress of "science and useful arts." That a process was an "art" capable of being patented was already considered beyond dispute in *Cochrane vs. Deener* (1876), involving a process or method of manufacturing flour. The issue was infringement, the defendant performing the process using apparatus of somewhat different construction from that disclosed

and used by the patentee. The Supreme Court found the patent valid and infringed. In the course of its opinion, the court produced the following, often quoted, passage of dictum:

A process is a mode of treatment of certain materials to produce a given result. It is an act, or a series of acts, performed upon the subject matter to be transformed and reduced to a different state or thing. If new and useful, it is just as patentable as a piece of machinery. In the language of the patent law, it is an art. The machinery pointed out as suitable to perform the process may or may not be new or patentable; whilst the process itself may be altogether new, and produce an entirely new result. The process requires that certain things should be done with certain substances, and in a certain order; but the tools to be used in doing this may be of secondary consequence.

This passage has sometimes been misconstrued as a "rule" or "definition" requiring that all processes, to be patentable, must operate physically upon substances. Such a result misapprehends the nature of the passage quoted as dictum, in its context, and the question being discussed by the author of the opinion. To deduce such a rule from the statement would be contrary to its intent which was not to limit process patentability but to point out that a process is not limited to the means used in performing it.

Summary

Reviewing the foregoing development of the law relating to process claims, we find nothing to indicate an intent of Congress or the courts to deny patent protection to process claims merely because they could alternatively be read on a process performed through the mind by the use of aids such as pencil and paper. It is therefore an appropriate point to correlate the development thus far traced with our decision in Abrams discussed earlier [CW, Dec. 4].

We do not feel our reasoning need be encumbered by the so-called "rules" of Abrams for the reasons we have indicated. However, it is noted that in Abrams, unlike the present situation, the claimed process could only be performed in the mind, so far as was apparent from the specification. The Abrams situation may thus be distinguished from that presently before us, in which there is adequate disclosure how the process can be performed without mental calculation. This distinction from Abrams leads us to our present holding which is that patent protection for a process disclosed as being a sequence or combination of steps, capable of performance without human intervention and directed to an industrial technology—a "useful art" within the intentment of the Constitution—is not precluded by the mere fact that the process could alternatively be carried out by mental steps.

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orders and installations

The Dutch Bank Giro, the Netherlands, has ordered an Electronic Retina optical character reader from Recognition Equipment Ltd., the U.K. subsidiary of Recognition Equipment, Inc., Dallas. Delivery is scheduled to the bank's headquarters in Amsterdam in March.

The Bank of Canada, Ottawa, has ordered a Honeywell 1200 computer system to be used for bond redemptions, research, payroll, and accounting.

Payless Western Wholesale, Portland, Ore., a distributor of drugs and the operator of 26 stores in a four state area, has placed an order for a Univac 9300 computer system to replace punch card equipment presently in use.

The U.S. Steel Corp. has ordered a GE 4020 process computer to be used for a basic

oxygen process application. Delivery is scheduled for 1969.

The Eberhard Mfg. Co., Cleveland, has ordered a Univac 9200 system for use in payroll processing, accounts receivable, inventory, and production control. Scheduled for delivery in February, the computer will replace punched card equipment presently being used.

The Commonwealth of Mass. comptroller's division will install an RCA Spectra 70/45 system in January to handle legislative bill status, state budget, and personnel records. The system will replace second generation equipment currently in use.

The Town of Huntington, N.Y., has purchased a Univac 9200 computer system which it has had on a trial rental basis. The system will be used to follow up on parking violations notices, tax



billing, payroll processing, and licensing procedures.

The New York City Department of Social Services has installed an RCA Spectra 70/45 system to handle on-line budget computation for all of the city's welfare cases.

Affiliated Foods, Scranton, Pa., has placed an order for a Univac 9200 computer system to be used for general accounting operations. Installation is scheduled for June and will replace punched card equipment presently in use.

The Department of Motor Vehicles, Raleigh, N.C., has installed a Farrington 3030 optical character reader to process automobile ownership changes, and plans to phase out its keypunch method of computer input.

Green Cross General Hospital, Cuyahoga Falls, Ohio, has installed a Honeywell 120 computer system to handle in-patient and out-patient accounts, as well as the hospital payroll.

Johnson Service Co., Milwaukee, Wisc., has ordered seven SDS Sigma 2 computers to monitor climate, lighting, and other services for buildings under construction or rejuvenation in the U.S. and Canada.

Allied Stores Corp., New York, has ordered an IBM 1288 optical page reader to process the standard vendor invoice recently approved by the retail industry. Such information as name of payee, store number, department number, and order number, in typed, printed, or hand written form, will be read by the optical page reader and fed to a computer for processing.

Management Information Services Inc., Columbus, Ohio, a financial and commercial data processing service bureau, has installed a Honeywell Model 120 computer system to be used for general accounting for automobile clubs, savings and loan associations, and a publishing house. The unit replaced a Model 1440 disk system.

Micromation Technology Corp., Chicago, has placed an order with Computer Industries, Van Nuys, Calif., for two microfilm printer-plotter systems to be used to free computer users from paperwork. In addition, the units will be utilized for business and statistical charts.

Analog Technology Corp., Pasadena, Calif., has installed a Varian Data 520/i for measuring and analyzing electromagnetic and charged particle radiations from space.

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London Bank Buys An Optical Reader

LONDON — The National Westminster Bank Ltd. has purchased an optical character recognition system valued at \$1.2 million from Recognition Equipment Ltd., a subsidiary of Recognition Equipment, Inc., Dallas. The system will be used to automate credit transfers and direct debits between banks.

Navy Selects C&S For Job

FALLS CHURCH, Va. — The Naval Ship Systems Command has selected Communications & Systems, Inc., a division of Computer Sciences Corp., Los Angeles, to provide technical assistance and support to the Navy's Fleet Maintenance Data Collection System, a component of the 3M system, which comprises maintenance, material, and management.

Nasa Contract to GE Lab

SYRACUSE, N.Y. — A contract for the development of a computer graphics system program was awarded by Nasa's Marshall Space Flight Center to General Electric's Electronics Laboratory. The program will be used by Nasa for the computer aided design of printed circuit boards.

NASA Lets CCATS Contract

PHILADELPHIA — NASA has selected the Univac Federal Systems Division to supply operational engineering support for the Univac 494 computers in the Communications Command and Telemetry System, a key part of the Apollo lunar landing mission. The contract calls for programming, engineering, and operations of the system through June 30.

CONTRACTS

SDC Gets Nasa Contract

HUNTSVILLE, Ala. — A \$69,000 study contract to develop requirements for a computer based information system has been awarded by the Nasa Marshall Space Flight Center to System Development Corp. The Generalized Engineering Data Management System is to be designed to operate on a Univac 1108 computer facility and serve as a foundation for a central data bank for Marshall engineering information and retrieval.

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Software House Opens, Names First President

BALA CYNWYD, Pa. — United Systems Inc., a new software organization, has opened offices here.

Austin C. Nester, formerly with Burroughs Corp., has been named president.

The firm said its personnel have experience in communications/teleprocessing systems as well as business data processing and basic software development.

Time Sharing Firm Formed in Mass.

BRAINTREE, Mass. — Interactive Sciences Corp. has been formed to develop and market subscription and time sharing services.

Hammond Ladd, president and director, was eastern regional manager for Information Development Co.

Richard Reut, vice president and director, was corporate long range planner and digital systems marketing manager at the Foxboro Co.

Fredkin to Work With Project Mac

CAMBRIDGE, Mass. — Edward Fredkin is taking a leave of absence from his position as vice president for advanced development at Information International Inc. to become a visiting professor in the Electrical Engineering Department at MIT.

Fredkin will continue to be board chairman of Information International and expects to devote part of his time to technical projects there. At MIT, Fredkin will be a member of Project Mac and will conduct research in the field of pattern recognition.

Interactive Computing Formed in California

ORANGE, Calif. — Interactive Computing Corp. has been formed here to provide time sharing, software services, and hardware design to business, engineering, and scientific users in the Southern California area.

Headed by Walter J. Kosinski, former manager of advanced time sharing systems for General Electric, the company plans initially to install PDP-10 and a PDP-8 computers. Both are expected to be operational in December.

Compu-Time Is New Name Of Fort Lauderdale Firm

FT. LAUDERDALE, Fla. — Incorporation of Compu-Time, Inc., a time sharing company, and the election of Drew F. Burton as president have been announced.

Formerly operating as the Florida Computer Time-Sharing Co., the new firm uses a GE 420 system. Both Basic and Fortran IV are available, the firm said.

The company plans to open another office in Orlando by the end of the year.

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To reflect rising costs associated with this increased circulation, Computerworld announces new advertising rates effective January 1, 1969. The new rates, averaging a 30% increase, are modest, considering the great growth in the circulation base, higher postal charges, higher labor charges, etc.

Computerworld now offers the lowest cost per 1,000 of any computer-oriented publication. Even with the new rates in effect, the cost per 1,000 is still the lowest available.

Additional information on the new rates can be obtained by contacting Neal Wilder, National Sales Manager, Computerworld, 60 Austin St., Newton, Mass. 02160, (617) 332-5606, or any regional sales office.

'Virtual Store' Extends Capacity of Model 67

(Continued from Page 1)

whole program, the virtual address sometimes has no equivalent in the core units, and the data has to be fetched from comparatively slow backup storage, such as a drum. This is handled by the software, and is part of the overhead involved in the operation. In the past the software provided for the Model 67 had high overhead, which greatly cut down its attractiveness to a time sharing user.

Software Simplified

The software used by Computing Software Services attacks the problem of high overhead mainly by simplification. While the standard IBM software is designed to handle a number of processors and a number of memory modules in a single configuration, the CSS software assumes that there is only a single processor

present, and so avoids many of the overhead tests which normally are necessary. It also provides a complete environment, including an operating system, compilers, etc., for each individual user, avoiding interaction between users as in a single, complex system.

Paging

Where a program cannot proceed because the data it needs is not currently in core, the position of the required data is found, and a block of 4000 bytes (called a page) is brought into core from the backup store—drum or disks. Bringing the page in, however, takes considerable time, so the program being executed is replaced by some other program which currently has enough data in core to be able to proceed. The Computer Software System pricing structure provides that



The remote terminal, left, is the only clue that there is anything unusual about the company's Model 67.

while new pages are being loaded, no charge is clocked against the user. The hardware includes a 13 microsecond

clock as the basis of the charging unit so this is technically possible.

Cambridge Development

The software is based on the Cambridge Monitor System, a Type 3 program developed at IBM's Cambridge Scientific Center, working under a control program. The control program builds and maintains for each user a "virtual machine" which is indistinguishable to the user and his programs from a real machine, but is really simply one of many such virtual machines which the control program is managing. The control program allocates the resources of the real machine to each virtual machine in turn for a short "slice" of time.

Since the virtual machines are simulated, their configurations may differ from each other and from the real machine. Each user controls his virtual machine from his own terminal which is, effectively, his console keyboard.

Two Pricing Schedules

Computer Software Systems is offering two pricing schedules:

- A class A service under which connect time is charged at \$5 per hour for a program which can be contained in 256K bytes. An additional \$4 per connect hour is charged per further 256K segments, so that a user who needed a million bytes for his program would be paying \$17 per hour of connect time. Central processor time is charged at 40 cents a second, and disk storage at \$10 per 2314 cylinder/month.

- A class B service which allows for unlimited access to the system through ports, each of which is guaranteed at least one minute of central processor time per hour of connect time. Port charges vary from \$1750 a month for users who have eight or more ports, to \$3000 a month for users who have a single port.

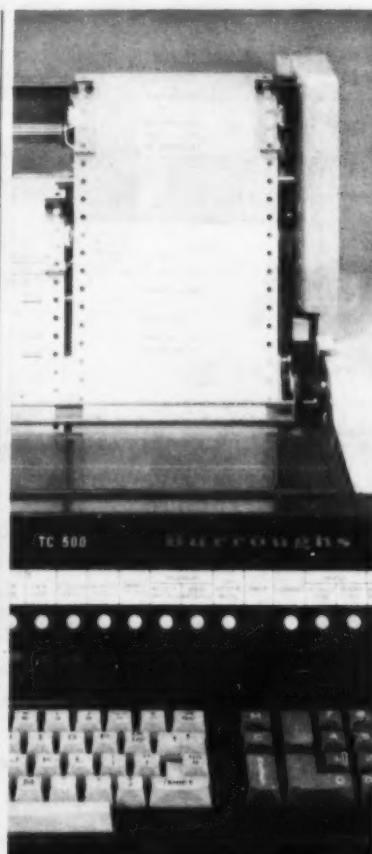
40-Times More Claim

The firm claims that it can provide up to 40 times more problem solving power with its systems than can other time sharing services. Richard Bayles, CSS' manager of technical operations, explained that this figure was based on the ability to provide extra memory space for users. "Other services stop short at 100,000 bytes," he said, "We go up to 16,000,000."

5 Ex-GE Men Form Time Share Service

BETHESDA, Md.—A new company has been formed here by five former GE employees to provide time sharing, remote access, and batch processing services.

International Telecomputer Network Corp., using a GE 635 that it can handle up to 200 simultaneous users, first offer its services in the W. D.C.; New York; and Philadelp.



The name of the game is
VERSATILITY

Whether you're figuring on commercial time sharing or on-line real time processing, Burroughs figures you need versatility.

Communications versatility—with remote terminals that are easier to use, more efficient, better suited to the jobs you need to do. That's why we're improving our time sharing and on-line systems to offer you CRT displays and remote computers (like our new TC 500) in addition to teletypes and telephones.

Programing versatility—with more freedom of choice, compile-and-go ability, fewer restrictions. That's why our systems let you program in multiple languages, write programs of any size, update or access multiple files instantly.

Enough talk about versatility! Share some time with us at the FJCC and see for yourself!

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